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BC (LOWER MAINLAND) EDITION SEPTEMBER 1997 VOLUME 10 NO 9

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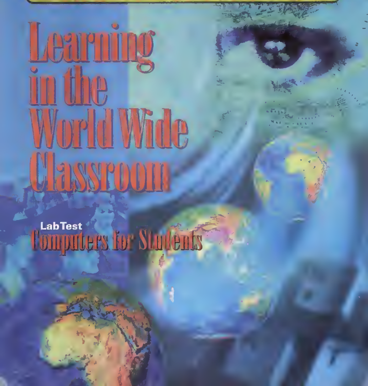

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32MB SDRAM Memory
512KB Single Bank Pipeline Burst Cache
4.3GB Hard Drive
15" 800HS Trinitron® Monitor (13.7" v.i.s.)
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Altec Lansing ACS-290 Speakers w/Subwoofer
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NEW! Matrox Millennium II 4MB WRAM Video Card
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Yamaha 32 Wave Table Sound
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2 Universal Serial Bus (USB) Ports
Microsoft Windows 95/30 Days Free Support
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8X SCSI CD-ROM
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Intel LANDesk Server Manager v2.5
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233MHz PENTIUM II PROCESSOR

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64MB EDO Memory with ECC
512KB Integrated L2 Cache
6.4GB Hard Drive
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NEW! Matrox Millennium II 4MB WRAM Video Card
16X Max Variable EIDE CD-ROM Drive
Yamaha 32 Wave Table Sound
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NEW! 56K Capable* U.S. Robotics x2 Modem
2 Universal Serial Bus (USB) Ports
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Microsoft Office 97 Small Business Edition w/Encarta
Microsoft IntelliMouse
3 Year Limited Warranty‡

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DELL DIMENSION XPS H266
266MHz PENTIUM II PROCESSOR

Mini Tower Model
128MB EDO Memory with ECC
512KB Integrated L2 Cache
NEW! 7GB Hard Drive
17" 1000LS Monitor (15.9" v.i.s.)
NEW! Matrox Millennium II 4MB WRAM Video Card
16X Max Variable EIDE CD-ROM Drive
Yamaha 32 Wave Table Sound
Altec Lansing ACS-490 Full Dolby Surround Sound Speakers w/Subwoofer
NEW! 56K Capable* U.S. Robotics x2 Modem
2 Universal Serial Bus (USB) Ports
Microsoft Windows 95/30 Days Free Support
Microsoft Office 97 Small Business Edition w/Encarta
Microsoft IntelliMouse
3 Year Limited Warranty‡

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512KB Single Bank Pipeline Burst Cache
6.4GB Hard Drive
NEW! 17" 1000TX Trinitron Monitor (15.9" v.i.s.)
NEW! Matrox Millennium II 4MB WRAM Video Card
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64MB EDO Memory with ECC
512KB Integrated L2 Cache
NEW! 7GB Hard Drive
17" 1000LS Monitor (15.9" v.i.s.)
NEW! Matrox Millennium II 4MB WRAM Video Card
16X MAX® Variable EIDE CD-ROM Drive
Yamaha 32 Wave Table Sound
Altec Lansing ACS 490 Full Dolby Surround Sound Speakers w/Subwoofer
NEW! 56K Capable* U.S. Robotics x2 Modem
Iomega Zip 100MB IDE Internal Drive with One Cartridge
2 Universal Serial Bus (USB) Ports
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Microsoft Home Essentials Plus Best of Entertainment Pack
Microsoft IntelliMouse
3 Year Limited Warranty‡

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- *Upgrade to a 17" 1000TX Trinitron Monitor (15.9" v.i.s.) add $140*

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16MB RAM
1.6GB Hard Drive
Options Bay Accepts 10X MAX® Variable CD-ROM, 3.5" Floppy Drive (both included) or optional 2nd Lithium-Ion Battery
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64MB ECC Memory
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4GB Ultra Wide SCSI Hard Drive (7200RPM, 8ms)
8X SCSI CD-ROM
3Com 3C595-TX Network Interface Card
Intel® LANDesk® Server Manager v2.5
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6 Drive Bays: 3 External 5.25"/3 Internal 3.5"
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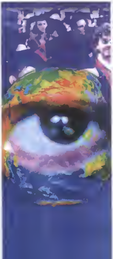

CONTENTS

BC EDITION • SEPTEMBER '97

FEATURES

WORLD WIDE CLASSROOM

14 Wired education in the real world

28 The world is a textbook in the Internet Age

TCP TEST LAB

72 You call this entry-level?
"Student" computers never looked so good

78 Entry level PC survey

NEWS & REVIEWS

NEWS

34 Comdex Canada '97 Editors' Choice Awards

HARDWARE

42 High fives for latest Psion

52 Hunting for the well-loved PC
.. or how to buy a used computer

56 Hard Drives 101
An education in specifications

SMALL & HOME OFFICE

48 What are trusts and how could they benefit you?

SOFTWARE

69 Internet Explorer 4.0 vs. Communicator 4.01
The next-generation browsers are here

85 Perfect Office a strong suite contender

97 Getting the fax from WinFax 8

139 WM CAP macro virus...and the beat goes on

MULTILINGUAL SOFTWARE

89 Learning language on your own
A quick look at several language programs

92 Information technology opportunities huge in China

95 Apple eases browsing in a second language

[illegible]

100 All about MPEG
Making digital video with your PC

104 Shopping experience missing from e-commerce

CD REVIEWS

107 A virtual journey under the Earth's crust

GAMES

109 Cleared for take-off

ONLINE

111 David Hathaway's top 10 Canadian music Web sites

112 Cooking spam Part II
More recipes for dealing with junk email

113 Tools for creating on the Web
Part I HTML editors

114 Weaving your own Web site: Part XXIV
HTML elsewhere Pt. I XML

120 Exploring IRC

BOOKS

125 Humor to enjoy and share via email

127 Web Journal explores scripting languages

127 No-frills guide gives graphic examples of HTML

128 Pounding the Web for a Jou

128 No format too obscure for graphics reference book

130 Guide covers NT basics and troubleshooting

130 Superior screen grabs from Snagit

MAC ARENA

133 Tips for getting the most out of Mac OS 8

135 Summer at Apple: good new, bad news

TRAINING

137 Computer based training goes online

THE LAST BYTE

147 Full circle in space

DEPARTMENTS

6 From the Editor
6 Letters
10 What's New
138 User Groups
140 Classified
141 Calendar
141 Marketplace
142 Computer Directory
144 Advertising Index

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FROM THE EDITOR

The party's been great, but it is time for me to go
I will be ending my term as president publisher and editor at Canada Computer Paper Inc (the company that publishes *The Computer Paper*) as of Sept 30 We have a new publisher, David Ritter, who will be operating from Toronto (the balance is restored, the universe is whole again)

I have been working with David to transfer some of my knowledge and ideas for future growth He comes to the job as a seasoned publishing executive with more than 17 years of marketing, sales and general management experience with Maclean Hunter Publishing and Baxter Publications. He has hit the ground running and although some days his head is spinning with all the new things he has to learn, he is absorbing quickly what is needed to keep the company going and growing His mandate is to continue the successful growth we have experienced and to "export the revolution." (You can contact David Ritter at publisher@tcpon.com)

My reason for leaving
In 1995, Canada Computer Paper Inc., the company I started almost 10 years ago was purchased by Montreal-based Hebdo Mag Inc. the world's largest publisher of classified ad format publications with publications in Canada the United States, France Holland, Sweden Italy Switzerland Poland, Russia Taiwan Thailand and Puerto Rico

As some of you know when I originally sold the company two years ago to Hebdo Mag Inc , I was given a two-year management contract. That contract is now up and I feel it is time to move on.

When I sold, I did so with a view to spending more time with my family I plan to travel with my wife and our four children Our kids are home schooled and so this will be one big geography lesson for them We would like to see some of the world before they get too old and launch off on their own We plan to travel for at least two years, before considering any new projects.

I have enjoyed my time with the company immensely and love the work that we have been doing, but I hit 40 years of age this year and for me it is a time for introspection and thoughts on how I plan to spend the rest of my time on the planet.

My wife Kathryn and I started *The Computer Paper* in Vancouver in 1986, and expanded the publication into a cross-Canada publication with editions that provide coverage for Vancouver, Calgary Edmonton Saskatoon, Regina, Winnipeg, Toronto, Ottawa Montreal and Halifax. Along the way we purchased *Toronto Computes!*, *Computer Player!*, *Canadian Computer Wholesaler* and *Government Computer* We also launched *Québec Micro!* and *Ottawa Computes!* in the process.

With 11 different editions and a circulation somewhere over 640 000 copies a month, we can lay claim to being Canada's largest computer publishing company—not bad growth for 10 years. I am happy with where I am leaving things. I feel I have achieved some of the goals I set out for myself, or saw along the way

Our Oscar speech
We would like to thank the many, many people who have brought the company to this point Obviously the staff at Canada Computer Paper Inc. have been key to the development and success of the company You can read the masthead of our magazines to see the names of the 75-plus people who make it all possible each month

We would like to specifically name some people who have been key to the long term development of the company John Oliver national sales manager; Hari Singh Khalsa, associate publisher in Vancouver Patricia Fitzgerald, marketing manager and associate publisher in Calgary Suzanne Fitzgerald, Winnipeg manager; Graeme Bennett, managing editor Christine McPhee corporate controller Tino Wong, operations manager in Toronto; and Einar Murchison associate publisher for our Eastern Edition.

We would also like to thank our many long-time and loyal advertisers who have made the journey possible. Finally, we thank you the readers who keep reading, keep using the magazine as a source for your purchasing and keep telling advertisers you saw their ads in our publications. Oh yeah, we would also like to say thanks to our Moms and Dads

One more for the road
You will probably get at least one more column out of me before I leave on our round-the-globe trip The management of Hebdo Mag has asked me to send a postcard or article once in a while from the road so don't be surprised if my smiling face shows up on occasion from some far-off place with an opinion on global computing.

Enjoy the issue

Douglas Alder
Editor/Publisher

LETTERS

More on video editing please
It was a very good article on video editing ("Professional quality video on the cheap," *TCP* July 97), but I will like to see more It would be nice if you can do a special Test Lab run on different video editing cards on the market such as. AV Master Bravado 1000, Broadway Micro Video DC20 and DC30. Spark DV 2000 (digital in/out), Quadrant videowave, Matrox Rainbow and others where the prices will be around $1 000 and less, S-VHS quality video, and analog input/output.

Shan B., via email

TCP replies. The good news is that we intend to continue our review of desktop video editing systems, including a review of three MPEG cards coming up

Mac user protests
While whizzing through the usual 116 pages of PC news in the August 97 edition of *The Computer Paper* I happened to catch the traditional miniscule (and ever-shrinking) Apple section only to see another pathetic review of another wonderful Apple product. Having installed the Grand Master (final release) version of Mac OS/8 on all of our machines yesterday the two most noticeable and outstanding features right off the bat were speed and stability Mac OS/8 is a work of art

In the first five or six paragraphs of your Mac OS/8 review (this was a beta copy you were reviewing, wasn't it?), you mention that darned near nothing worked throughout the entire installation process. I find this strange and question the condition of the equipment you tested it on—much of which is probably non Apple equipment to begin with We've been using and testing Mac OS/8 for six months and have never had a single problem at all during the installation process(es)—not bad for a beta copy Mind you, we use 100 percent pure Apple computers. What Mac Clones do or don't do to rectify the constant onslaught of problems associated with their processors should have absolutely no bearing on whether Mac OS/ 8 installs or not. Mac OS/8 will install on virtually any Mac provided the Mac is bug-free to begin with

Your review also mentions that Macs equipped with DayStar 601 upgrade cards "apparently" work with Mac OS/8 DayStar issued a press release two months ago stating that "we are no longer providing support for DayStar (601) Upgrade Cards If you are experiencing difficulties with System Software issues, we suggest that you downgrade to system 7 5 1."

Reviewers should not be concerned in the least as to whether or not a four year old upgrade board works with a brand new system software release I think that's ridiculous. Likewise readers should not be given the indication that Mac OS 8 "may" work with their older Macs when in actual fact, it probably won't Windows 95 didn't work with many "older products" at all!

Rather than proceed to pick the review apart piece by piece (which wouldn't be a bad idea), let's just put it this way: the next time you review an Apple product, please make sure the reviewer likes Macs to begin with That shouldn't be hard to do after all, isn't *The Computer Paper* assembled and published on Macs? I'd hate to see what would happen if Mac people reviewed PCs Come to think of it, why don't you give us a call when it's time to review Windows 98?

Mark Weston, North Vancouver via email/

Another Mac reader protests
Your recent article on the latest Mac operating system prompted me to write this letter in the Mac's defense. Your article was certainly not out of line (I appreciate your paper for its consistently high quality content) It reported the good and the bad of this latest revision in a fairly neutral context

However, there were a couple of points that I could only shake my head and wonder how you could be so particular "Does not support 68030-based Macs"—last time I checked Windows 95 did not support even early 486-based machines (a much more recent and powerful computer compared to the 68030) and nobody even suggested that it should have. Maybe this is because Intel-based products become obsolete so fast compared to their Motorola counterparts?

Old PCs seem to disappear old Macs

Continued on page 8

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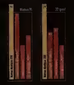

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Continued from page 6

seem to linger on. Might I add that Apple should be credited for their incredible ability to maintain compatibility when they bridged the gap from 68000-based machines to the Power PC. "Weak handling of non-Mac files"—oh and PCs do such a great job of handling Mac files? The fact that Macs access PC files at all is more ability than any PC has with a Mac file.

I just think that it is important we continue to recognize the Mac for its strengths not its shortcomings. After all, it has been the principle contributor to how software hardware, and operating systems are designed today And now ladies and gentlemen I'd like to raise my glass to Apple Computers. may the Macintosh always be remembered as the computer that set the standard for the rest to follow

Bill Morrison West Vancouver via email

GB replies I happen to like Macs just fine, and I've owned several I am a current PowerMac owner with both a desktop unit and a portable Apple product (genuine Apple, not that this makes them "better" than the clones, mind you) on my desk at this moment.

As for my "Does not support 68030-based Macs" comment, wouldn't you like to know, if you were a 68030 Mac owner that this is the FIRST Mac OS release in history that leaves behind that generation of machine? It's valuable info for some readers Why criticize factually correct info that properly advises people, when there's so much else to better spend your effort on?

F.Y.I., Win95 runs just fine on most old 486s with sufficient RAM and disk space it isn't fast, but then neither was System 7 on a Mac Classic.

Is it really that good?

After reading your Lab Test on 17-inch monitors in the August issue of *The Computer Paper* and having given the Diamond Pro from Mitsubishi such a good rating I was almost certain to buy this model.

However I try to base my decisions on just more than one review and came across one on the Web at http://www.cnet.com Their review of the Diamond Pro was a lot less appreciative and gave this model in my opinion an unsatisfactory rating for a monitor, especially one I'm going to buy Can you explain why there was such a big difference in each review? Keep up the great work!

SH replies. In the world of monitors, much like any other electronic product, there will be a certain degree of variation from one particular sample to another, even though they are the exact same model. If you take five samples of the same model from the same manufacturer and line them up side by side, no two images produced will be exactly alike There will always be certain differences, some significant, others hardly worth mentioning

It is my belief that the monitor that was reviewed at http://www.cnet.com was in some way either not properly set up or was an example of one such monitor with some minor flaws from the factory I must say, more over that I completely disagree with the CNET review as far as the on-screen display (OSD) goes.

I found the Mitsubishi's OSD to be the easiest to understand and use by far when compared to any of the other 20 or so models we ended up reviewing The other review also said the image was dim when compared to other models, and the reviewers go on to say that they "prefer the real thing"—meaning they like the original Sony Trinitron tube over the DiamondTron

Personal preferences aside, Mitsubishi did not only "licence" the Trinitron technology from Sony, but made significant enhancements to it as well, something that is not mentioned in the CNET review. The 87TXM we reviewed was, in every way, a near-perfect monitor There were no problems with ghosting, image quality or focus

Before opening up the very first monitor in our August Test Lab, this editor vowed to himself that he would end up purchasing the one he liked the most. It must have a combination of exceptional image quality, a reasonable price and last but not least a very impressive set of design specifications

Having sat down and worked with a total of 25 monitors (some monitors arrived too late to be included in the review) it wasn't a hard decision to make Although its price is higher than several in the survey the 87TXM was worth every penny in my opinion I like to think of a monitor as being a long-term investment. I will still rely on it long after my Pentium processor goes through several replacements in the course of the next two or three years.

Correction

In our Aug 97 review of Mac OS 8, we wrote that the OS returned a "-2003" error when certain file types were double-clicked This is only true if the optional "Easy Open" extension is disabled, or was not installed initially. QuickTime 2.5 shipped with Mac OS 8, includes the ability to play MPEG files, but you wouldn't necessarily know it by double-clicking a PC-based MPEG movie. The Easy Open dialog opens up with a list of applications on your drive that may or may not be able to play the MPEG file. If the user is wise enough to know that "MoviePlayer with QuickTime Translation" is the right choice, the movie plays, otherwise, the file may open as garbage.

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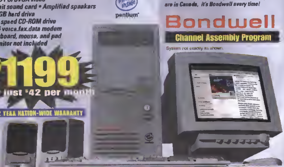

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Compaq rolls out new Presarios • Compaq Canada, Inc has announced five new series of Presario desktop and notebook PCs, claiming entirely new designs that incorporate the latest PC technologies at extremely competitive prices.

The company claims the mass product introduction, which it made June 30, is the opening move in a campaign to restore its position as the leader in the Canadian PC market, which has been eroded somewhat in recent quarters

The new product lines consist of the Compaq Presario 1200 and 1800 Series multimedia notebooks, the Presario 2200 series of desktops, which start at under $1,785 (including monitor), the Presario 4500 series, with MMX technology starting under $1,639 and the Presario 4800 Series, a lavish line of premium multimedia PCs with features such as DVD drives, Pentium II CPUs, home-theatre surround sound, and backlit Easy Access controls.

The Presario 4800 is aimed at the multimedia power user, and offers a Creativity Imaging Centre built into the computer that enables video capture, photo editing, and MPEG 2 digital video playback. Both the Presario 4800 and 4500 have an Instant internet feature that allows on-button Internet access.

The Presario 2200 series, which comes with a 180 MHz CPU 33 6Kbps modem (upgradable to 56Kbps), 16 MB of RAM, 1 6 GB drive 8x CD-ROM drive and 14-inch .28 mm/dot pitch monitor is "for people who are looking for a second

home computer as well as for those first-time buyers who want a complete, multimedia PC at an unbeatable value."

As well as the new wave of home PCs, Compaq announced new additions to its Netelligent networking product line, including hubs, switches, network management software, controllers and 56Kbps modems, all aimed at fulfilling "Compaq's commitments to lowest total cost-of-ownership high performance industry standards."—JE

Contact: Compaq Canada
Web site. http://www compaq.ca

Fujitsu launches pen tablet for NT • Fujitsu Personal Systems (FPSI) has launched the latest in its handheld computer line the Stylistic 1200 Unlike other handheld devices such as the Newton Message Pad 2000, Psion Series 5, or Windows CE handhelds, the Stylistic is a full-function, Windows PC in a handheld form with a touch sensitive LCD screen.

The Stylistic, launched July 21, is a Pentium 120 MHz based computer with 16 MB (expandable to 48 MB) RAM, a shock-mounted 1 4 GB hard drive (upgradable to 2 1 GB) universal serial bus (USB), 128-bit video controller lithium ion battery (for up to four hours operating life), a range of screen options (TFT and DSTN color and

transmissive or transflective monochrome versions), and a full range of PC-style ports (IrDA, 2 RS-232, external monitor parallel, four audio input/output keyboard, mouse two USB floppy, and replicator port, plus two Type II or one Type I PC Card slots)

For the first time, Windows NT Workstation 4.0 will be a regular option for users of the Stylistic PC. The Windows NT option for the Stylistic 1200 comes with power management and enhanced PC card management utilities. Windows 95 and Windows 3 1 operating systems are also available as options.

Fujitsu currently "owns" about 60 percent of the handheld PC market on the basis of its success with its earlier Stylistic models, and in *TCP* tests over the past three years, the earlier 500 and 1000 models impressed us as excellently designed, ergonomically sound computing platforms Fujitsu expects the new model to expand the use of handheld computers in mobile workforce applications, ranging from health care to sales, warehousing, law enforcement, and manufacturing —JE

Contact: Fujitsu Personal Systems, Tel. 905-602-5454.
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WHAT'S NEW

Continued from page 10

PeopleSoft adds to Vancouver R&D unit • Toronto-based PeopleSoft Canada is expanding its Vancouver based research and development unit. The company says more staff along with a new hotline support function that will employ four people, will double the number of staff in the Vancouver office by the end of the year.

The technical team of seven people will grow to 15, while the nine-member public sector group will be expanded to 12. The technical team deals with Canada-specific issues, such as conformance to legislation and standards; while the public sector team works on functions of relevance to software used in the public sector.

PeopleSoft Canada's parent company is PeopleSoft Inc in Pleasanton Calif PeopleSoft develops high-end client-server applications for accounting, human resources management, materials management distribution, etc —*DT*

Adobe updates PhotoDeluxe • Adobe Systems Inc has released PhotoDeluxe 2.0, a version the company claims features radically increased power, along with a radically reduced learning curve.

For about $70, ($55 for an upgrade from version 1.0) PC users can have access to professional level power via a simple point and click interface PhotoDeluxe 2.0 includes features that simplify use. One example is one-step 'Red-Eye' removal from scanned photos Another new feature is a SmartSelect intelligent edge tool that makes cutting and tracing easy The Photoshop Clone Tool is included, along with short Guided Activities, such as making greeting cards.

At every stage, Adobe representatives claim, PhotoDeluxe has been built from the ground up to match "user workflow"—the typical steps a user takes to do a specific task. PhotoDeluxe also has a full suite of text handling tools.—*JE*

Contact: Adobe Web site. http://www.adobe.com

IT war stories wanted • TORONTO (NB)—Toronto consulting firm Alacrity Inc. wants war stories about information management and business initiatives dealing with information technology To encourage submissions, the firm is offering a Pentium notebook computer valued at about $3 000 to the author of the best story submitted each year.

The most interesting stories will appear on Alacrity's Web site at http://www.tigerpearls.com, which is also where stories can be submitted. They will also appear in the company's TigerPearls newsletter. Alacrity principals Mary Chung and Alastair Davidson co-wrote the book *Riding The Tiger* with Toronto consultant Harvey Gellman.—*Grant Buckler*

Panasonic pushing LS-120, DVD-RAM • Panasonic a longtime leader in manufacturing 3.5-inch PC floppy drives is aiming to move to the leading edge of the next generation of PC data storage technology The company has already shown consumer and PC versions of DVD players and drives, and has greatly increased its promotion of the LS-120 drive a floppy drive that will read and write to 100 MB diskettes, as well as regular 1.4 MB diskettes

The LS-120 has support from a wide range of industry leaders, including Compaq, and is competing head to head with other new mass storage devices from Iomega, Fujitsu, and Syquest As well, Panasonic announced at Comdex Canada 97 its intention to enter the DVD-RAM (recordable DVD) market where it will be competing with new products from Hitachi and Sony.

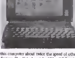
Panasonic has also introduced new notebooks the rugged CF-25, and the slim multimedia-ready CF-35 as well as two outstanding, tiny digital cameras the Palm Cam, and the Cool Shot, and two monitors, the PanaSync S70 17 inch monitor, and the PanaFlat PF 70 flat screen monitor.

The LS-120 is a nice technology the fact that it does double duty as a standard floppy drive as well as a 100 MB per diskette mass storage backup system is a considerable convenience for PC users. However as with all new would-be standards, it will require a combination of technical excellence and first rate marketing to get "mind share" among PC users and market share at the retail level —*JE*

Contact: Panasonic, Tel: 905-624-5505.
Web site http://www.panasonic.com

Philips launches Velo 1 • Philips Electronics has introduced the Velo 1 the latest and most feature-packed Windows CE handheld computer on the market According to Philips, "The Velo 1 allows on-the-go professionals to carry the essentials of their desktop computer in the palm of their hands."

The Velo 1 is based on a high-speed chipset derived from the Silicon Graphics MIPS R4000 RISC chip technology which Philips claims gives this computer about twice the speed of other CE devices. The Velo 1 weighs 374 g (13.2 oz.) and has a backlit greyscale screen with 480x240 pixel resolution, and a 61-key QWERTY keyboard—which is the nicest keyboard of any of the CE devices this writer has tested, with its nicely spaced, comfortable, curved springy keys.



Among the most innovative features is a 19.2Kbps internal modem, with a cleverly designed RJ-11 jack that requires no special cable. Also, there is a built-in voice-memo capability, with a good quality omnidirectional mini-microphone incorporated into the case, and memory storage for up to 16 minutes of audio. Voice messages can be sent via the modem as WAV files, and "read" on the recipient's Web browser. The Velo 1 comes with 4 MB of ROM and 2 MB of RAM, which is expandable

Like other CE devices the Velo 1 comes with the Windows CE operating system and a full suite of software (including pocket versions of Word, Excel and a Web browser) preloaded in ROM The base price is about $999

Of all the CE devices currently on the market, this offers the most complete feature set, and the most impressive design. The CE devices have suffered somewhat from the limitations of file transfer between the handheld and full-sized PCs (some formatting options are not transferable to Excel and Word files, for example) and the small keyboard and screen which make them much less productive than a notebook PC. It will be interesting to see if the unique features of the Velo 1, plus other recent CE offerings such as the Hewlett-Packard LX 200 and the LG Electronics Phenom will spark the growth in the CE platform that has so far been so elusive.—*JE*

Contact: Philips Tel 888-FOR-VELO or 416-754-6245 Web site http://www.velo1.com

Over 40? Check your eyes • According to the Ontario Association of Optometrists a condition called presbyopia often develops as people push through the big 4-0 What happens to aging eyes is the crystalline lens becomes stiffer, preventing it from changing shape enough to focus on close objects.

A common solution is to buy a pair of reading glasses, two sets of glasses if you also need distance correction or bifocals. However the association points out that reading glasses are designed to make things clear at a distance of about 40-45 cm (16-18 in.) This doesn't help presbyopic people to see computer monitors, since they are typically viewed from a distance of about 24 inches Bifocals don't help either since they are designed to be most effective when eyes are cast downward—when reading a book, for example And switching between two sets of glasses is impractical for people who are constantly shifting their focus between papers on their desk and the computer monitor

Among the solutions are variable focus lenses—bifocals, trifocals or multifocals—without the lines These smooth out the transitions between correction for close, middle and far distance vision.

But the bottom line advice given by the association is that, even if you're eyes haven't bothered you in the past, as you enter your 40s, you should have your eyes checked regularly.—*DT*

IBM Canada announces Ambras, lease plan • While the Ambra brand was once seen in the North America and Europe, Canada is the only market where it is still being sold And, judging by IBM Canada's latest announcements, it intends to keep the Ambra name alive for some time

In July IBM announced six Ambra models in the Ispirati line. Powered by a 150 MHz, 166 MHz or 180 MHz Cyrix MediaGX processors the Ispiratis are priced as low as $1 249 for the 150 MHz model without monitor The price includes 16 MB of RAM a 1.6 GB hard drive, 33.6Kbps voice/faxmodem, 16x CD-ROM drive and Windows 95 operating system Also included is a software bundle comprising Lotus SmartSuite '97, "Communications Centre" software, the 1997 Canadian Encyclopedia Plus, and IBM AntiVirus software IBM is also throwing in a free coupon for a copy of the World Book 1997 Multimedia Encyclopedia.

All Ispirati models include an NTSC-output jack that allows users to connect a TV to the system—for game playing or big-screen Internet surfing

A matching 14-inch monitor bumps the price up another $500 The higher-priced models are similarly equipped but have 166 MHz or 180 MHz Cyrix MediaGX processors and larger hard drives Some models also include IBM's VoiceType Simply Speaking Gold, software that allows users to dictate directly into a word processor or other application.

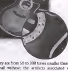
Lease to own. IBM Canada also announced a leasing plan called the Ambra Ispirati Internet Solution.

With no money down (an approved credit) users will be able to lease-to-own an Ispirati 33EX for $99 a month (lease term, 36 months) The system will include a 150 MHz processor, 32 MB of RAM, a 3.1 GB hard drive 16x CD-ROM drive, a 15-inch monitor, voice/faxmodem software bundle and IBM Voice Type. Also included in the lease rate is an Internet account on the IBM Global Network for up to 100 hours per month.—*DT*

Contact: IBM Canada, Tel. 800-426-2256
Web site http://www.ca.pc.ibm.com

Compression Engines technology wavelet based • Compression Engines Inc. of Houston is offering a free file compression engine (light version), as well as free Netscape Navigator and Microsoft Internet Explorer plug-ins to allow users to view images compressed with the engine.

Compression Engines says its wavelet-based compression engine allows files to be compressed so they are from 50 to 300 times smaller than the original without the artifacts associated with other image compression methods.



A commercial version is also available for US$295. It includes batch file compression, the ability to compress JPEG and TIFF files and it also lets you expand from the WIF wavelet format and save to a variety of other file formats The company also produces a software development kit.—*DT*

Contact: Compression Engines, Tel: 888-876-3078.

What's New is compiled by Jeff Evans, David Tanaka, Graeme Bennett, and Megan Johnston.

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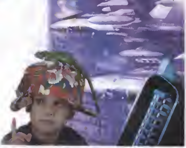
WIRED EDUCATION IN THE REAL WORLD



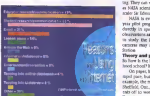
BY JEAN ALLEN-IKESON

Imagine teaching physical education from a textbook of diagrams and descriptions It sounds bizarre, but such passive learning is far too often the case with science and high-technology education, particularly for students under the age of 16.

Active participation in science has become elitist over the last 60 or 80 years: no Mendels need apply unless armed with years of university education. Read Only Write Protected has been the norm.

Typical of the Computer Revolution, the Internet has opened a crack wide enough for kids and their teachers to jump in, learn and experiment with interactive problem solving They can watch a NASA mission unfold at the same time as NASA scientists, or converse with legends such as Everest scaler Sir Edmund Hillary

NASA is even helping to widen that crack, with a three-year pilot program called KidSat, which involves classrooms directly in space exploration Using the Internet, kids plan observations and use images from Space Shuttle-based cameras to study the Earth's fragile environment. Eventually these cameras may also be mounted on the International Space Station



Theory and practice

So how is the Internet actually being used in your neighborhood school? It depends on who you talk to.

On paper, Internet availability in schools has occurred at a rapid pace, but the practical application still lags behind. For example, the middle school in my area, Dr. John G Seaton in Sheffield, Ont., is a rural school whose student body sends parents off to work each day in nearby Waterloo, Hamilton and Toronto

It is operating with one 14 4Kbps modem that runs off a secondary line, which frequently gets disconnected when someone in the office picks up the phone to see who is on the line! Better hardware is promised for the fall

Technically the school is "online," but practically the students see little of the goodies currently available The teacher in charge of the lab, Juris Kanduth, is willing and able but lacks hardware In other schools the reverse is true. A few lucky schools have both resources and willing staff.

But the problem still exists for many schools that the essential triumvirate of trained teachers, and up-to-date hardware and software is elusive. According to Barbara Gollon who runs KidTech/BG Associates, "Many teachers don't have much surplus time to plan curriculum and integrate Web or other Internet/intranet-conferencing tools if they don't have the equipment, inexpensive access, or any training "

Even though the technology is newish, the applications available for interactive Internet use by teachers and students can be impressive. So for schools with the expertise money and equipment, the question becomes in what ways is this new technology being used and how can it change delivery of education?

The answer lies in finding any practical or convenient way to gain or exchange information According to a Quality Education Data survey of U S public schools on reasons for using the Internet, 79 percent responded that it was used by educators for research and communication, 63 percent said

Continued on page 21

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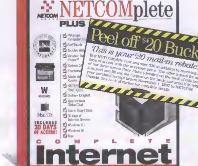
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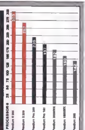

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[illegible] Fast IDE Hard Drive [illegible]
PCI Enhanced IDE Controller
PCI Trident 968x 3D Accelerator
[illegible] Support
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14" Non-Int SVGA Monitor .28mm dp
Mid-Tower Case with 230W CSA Power Supply
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Mini-Tower Case with CSA Power Supply
104-keys Win95 Keyboard 3 Button Mouse
Creative Labs Sound Blaster 16 Card
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ACER

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[illegible]

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ACER

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Acer

$95.00

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NetWare v3.12 100/250 User	$4170/Call
NetWare v3.12 Manuals Only	[illegible]

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NetWare v4.1 5/10 User	$780/1880
NetWare v4.1 25/50 User	$2350/2810
NetWare v4.1 100/250 User	$4170/Call
NetWare v4.1 500/1000 User	Call/Call
NetWare v4.1 Manuals Only	$210

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Windows NT v4.0 Client Access Lic.	$45
Windows NT Server v4.0 upgrade w/5 Clients Lic.	$810
Windows NT Server v4.0 upgrade w/10 Clients Lic.	[illegible]
Windows NT Workstation 4.0 CD	$380
Windows NT Workstation 4.0 upgrade	$188
BackOffice v2.5 Server CD	$2280
BackOffice v2.5 Server CD	[illegible]
Microsoft SMS version 1.2 w/10 Clients Lic.	$1425
Microsoft SMS version 1.2 w/25 Clients Lic.	$2256
Microsoft SNA Server v3.0 w/5 Clients Lic	$1720

Network Printers

HP 5N Laserjet,600dpi,12ppm,4MB	$1689
HP 5Si Laserjet,600dpi,24ppm,4MB	$3480
HP 5Si NX Network Ready,600dpi,24ppm	$3875
HP 5Si Mopier	[illegible]
HP 4V Laserjet,600dpi 16ppm	$2680
HP 4MV Laserjet,600dpi 16ppm	$3795
Lexmark Optra N,24ppm,4MB	[illegible]
Lexmark Optra S 1250,12ppm,4MB	$1480
Lexmark Optra S 1250N 16ppm,4MB Ethernet	[illegible]
Lexmark Optra S 1650 16ppm,4MB	$1670
Lexmark Optra S 1650N 16ppm 4MB,Ethernet	[illegible]
Lexmark Optra S 2450,24ppm,4MB	[illegible]
Lexmark Optra S 2450N,24ppm 4MB Ethernet	[illegible]
Lexmark Optra SC 1275 3ppm 16MB	[illegible]
Lexmark Optra SC 1275N 3ppm 32MB	[illegible]

Tape / CD ROM Drive

Exabyte Eagle TR-3 Int. Backup Drive	$217
Exabyte Eagle TR-3 Int. Backup Drive w/Net	[illegible]
Exabyte Eagle TR-4 Int. Backup Drive w/Net	[illegible]
Exabyte 8700LT 5-10GB Ext 8mm Drive	$1579
Exabyte 8505XL 20-40GB Int/Ext 8mm Drive	[illegible]
Exabyte Eliant 820 14GB Int/Ext Tape Drive	[illegible]
Iomega Ditto Easy 800 Int/Ext	$149/205
Iomega Ditto 2GB Int/Ext Tape Drive	$219/280
Iomega Ditto 3200 3.2GB Int/Ext	$289/350
Hewlett Packard SureStore CD-R 6020 Int/Ext	[illegible]
Seagate 2GB 4mm DAT Int/Ext SCSI Drive	$835/985
Seagate 4GB 4mm DAT Int/Ext SCSI Drive	$875/1045
Seagate 8GB 4mm DAT Int/Ext SCSI Drive	$1175/1345
Sony SDT 5000 Int/Ext. 4-8GB DAT	$1280/1395
Sony SDT 5200 Int/Ext. 4GB DAT	$1066/1280
Sony SDT 7000 Int/Ext. 4-8GB DAT	$1320/1510
Sony SDT 9000 Int/Ext. 24GB DAT	[illegible]

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APC Back-UPS 280
$145.00

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BackUPS 200/280	$130/145
BackUPS 400/450	$200/300
BackUPS 600/900/1250	$340/488/830
BackUps Pro 280/420/650	$305/340/415
BackUPS Pro 900/1400	$540/780
SmartUPS 450/700/1000	$335/500/640
SmartUPS 1400/2200/3000	$800/1400/2320
Matrix 3000VA/5000VA (Modular UPS)	$3750/5500
SmartCELL for Matrix	$783
Line Conditioner LR600/LR1250	$170/240
PowerChute Plus for Novell v4.22	[illegible]
PowerChute for Windows	[illegible]
Network Surge Arrest 3 Outlet/7 Outlet	[illegible]
PowerManager II Outlet	[illegible]
PowerNet SNMP agent for Novell	$187

Cables & Jacks

Twisted Pair

Assembly 10 BaseT Cable 5/25/50 ft	$10/18/25
Assembly 10 BaseT Cable 100 ft	$45
Client 10BaseT 8c UTP per ft	$0.38
Cable 10BaseT 8c UTP per 1000 ft	$220
Connector RJ45M	$1.00

Coaxial

Assembly RG58/AU Thin Coax 25/50 ft	$18/22
Assembly RG58/AU Thin Coax 100 ft	[illegible]
Cable RG58/AU Bulk per ft	$0.25
Cable RG58/AU Bulk per 1000 ft	$105
Connector BNC "T"	$2.50
Terminator BNC 50 ohm	$2.00
Tool BNC Crimping	[illegible]
Terminator BNC 50 ohm w/ground chain	[illegible]

Ethernet Coax / Combo Adapters

3COM 3C503 Etherlink II BNC sa/5+	$279/240
3COM 3C509B Etherlink III BNC sa/5+	$145/135
3COM 3C509B Combo BNC/RJ45 sa/5+	$165/145
3COM 3C900 PCI Etherlink III Combo	$180
CNet CN600E+ BNC & 10BaseT Ethernet	$36
CNet CN800E PCI Ethernet Combo	$50
D-Link DE-220PCT ISA Ethernet Combo	$46
GVC 2000BT ISA Coaxial/10BaseT Jumpless	$47
GVC 2000BT PCI Coaxial/10BaseT Jumpless	$39
Intel ISA EtherExpress Pro 10+ Combo	$34
Intel ISA EtherExpress Pro 10+Flash Combo	$112
Intel PCI EtherExpress Pro 10+ Combo	$103
SMC 8416C ISA EtherEZ Coax	$124
SMC 8416BT ISA EtherEZ Combo	[illegible]
SMC 8432BT PCI EtherPower Combo	$109

Print Servers

Emulex NetQue 10BaseT/2 Print Server	$586
Emulex NetJet NT + Print Server	$425
HP JetDirect J2550B RJ45	$426
HP JetDirect J2552B RJ45/BNC/LocalTalk	$489
HP JetDirect J2555B Token Ring DB-9 & RJ45	$718
HP JetDirect EX Port J2591A	$488
HP JetDirect EX Plus3 J2593A RJ45/BNC	$555
HP JetDirect EX Plus3 J2594A Token Ring DB-9 & RJ45	$720
HP JetDirect J2580A 10/100VG Print Server	$750
Intel NetportExpress Pro Ext. Printer Server	$830
Intel NetportExpress Pro Int. Printer Server	$370
Intel NetportExpress Pro/100 Ext. Printer Server	$388

PCMCIA Adapters

3COM 3C589D Etherlink III TPO	$178
3COM 3C589D Etherlink III Combo	$248
3COM 3C562D-TP Etherlink III TPO + 33.6kbps Modem	$430
D-Link DE-650CT PCMCIA Combo NE2000 Compatible	$132
D-Link DME-328T Ethernet/Modem	[illegible]
SMC 8020T EtherEZ PC Card (RJ45)	$173
SMC 8020BT EtherEZ PC Card Combo	$232
Xircom PCMCIA 33.6kbps Modem	$284
Xircom PCMCIA 56Kbps Modem	[illegible]
Xircom PCMCIA RJ45 Ethernet + 33.6kbps Modem	$425
Xircom PCMCIA Combo Ethernet + 33.6kbps Modem	$470
Xircom PCMCIA Ethernet + 33.6kbps Modem (Mini-Rock)	$385
Xircom PCMCIA 10/100 Ethernet + 56K Modem	$458
Xircom PCMCIA 10/100 Ethernet Ready	$135
Xircom CardBus 10/100 Ethernet Card	$212

10 BaseT Hubs

3COM 3C16700 SuperStack 1 Entry Hub 12 Port	$370
3COM 3C16441 SuperStack 1 Entry Hub 24 Port	$670
3COM 3C16405 SuperStack II PS Hub 40 12 Port	[illegible]
3COM 3C16406 SuperStack II PS Hub 40 24 Port	$1170
3COM 3C16670A SuperStack 1 Hub 10 12 Port	$700
3COM 3C16671A SuperStack 1 Hub 10 24 Port	$1230
3COM 3C16678B SuperStack 1 Hub 10 48 Port	[illegible]
3COM 3C16590 SuperStack II Dual Speed Hub 16 Port	$1610
3COM 3C16591 SuperStack II Dual Speed Hub 24 Port	$2040
3COM 3C16700 OfficeConnect 8/TPO	$158
3COM 3C16701 OfficeConnect 8/TPO	$201
3COM 3C16710 OfficeConnect 8/TPM	[illegible]
CNet CN8TPC 8 Port Hub	$100
CNet CN816TPC 16 Port Hub, Small Footprint	$245
D-Link DE-805 TP/C 5 Port Hub	$65
D-Link DE-809TC 8 Port Hub	$125
D-Link DE-812TP 12 Port Hub	$220
D-Link DE-816TP 16 Port Hub	$248
D-Link DE-824TP 24 Port Hub	$362

Hewlett Packard AdvanceStack Hub 8 Port	$208
Hewlett Packard AdvanceStack 10BT 24T w/Manage	$1295
Hewlett Packard AdvanceStack 10BT Switching Hub-12R	$810
Hewlett Packard AdvanceStack 10BT Switching Hub-24R	$1138
Hewlett Packard AdvanceStack 10BT Switching Hub-24T	$1195
Netgear EN104TP 4 Port Hub	[illegible]
Netgear EN108TP 8 Port Hub	$100
SMC 3603T-EZ 6 Port Hub	$117
SMC 3608TC-EZ 8 Port Hub	$185
SMC 3616TC-EZ 16 Port Hub	$400
SMC 3208TA TigerHub 8 Port Hub	$230
SMC 3206BC TigerHub 6 Port Hub BNC	[illegible]
SMC 3206FC TigerHub 6 Port Fibre	$1040
SMC 3312TC TigerStack 12 Port Hub	$870
SMC 3326TA TigerStack 26 Port Hub	$1185
SMC 3328T TigerStack 28 Port Hub	[illegible]

10 BaseT Adapters

3COM 3C509-16 TP sa/5+	$278/240
3COM 3C509B TPO sa	[illegible]
3COM 3C900 TPO PCI	[illegible]
D-Link DE-220BT ISA Ethernet 10BaseT	[illegible]
D-Link DE-530CT PCI Ethernet 10BaseT	[illegible]
Intel ISA EtherExpress Pro 10+ 10BaseT	[illegible]
Intel ISA EtherExpress Pro 10+Flash 10BaseT	[illegible]
Intel PCI EtherExpress Pro 10+ 10BaseT	[illegible]
SMC 8416T ISA EtherEZ 10BaseT	[illegible]
SMC 8432T PCI EtherPower 10BaseT	[illegible]

Switches

3COM 3C16900A SuperStack II 12TP/1 TX	$2300
3COM 3C16000A SuperStack II 24TP/1 TX	$3225
BayStack 301 22 10BT/2 100B-TX	[illegible]
BayStack 302T 8 10BT/1 100B-TX	$2400
D-Link DES-2205 5 Port 10/100	[illegible]
IBM 8271 EtherStreamer 8 Port	[illegible]
SMC TigerSwitch 8 10BT/1 TX	$2180

100 Mbps Systems

3COM 3C905 TX PCI
Fast Ethernet Adapter
$95.00

3COM 3C905-TX FastEthernet PCI	$95
3COM 3C597 TX FastEthernet EISA	$325
3COM 3C16720 FastEthernet 8 Port Hub	$830
3COM 3C2500-TX/1 SuperStack II 100 12 Port Hub	$1815
3COM 3C250-T4 SuperStack II 100 12 Port Hub	$1820
D-Link DFE-500TX PCI FastEthernet	$90
D-Link DFE-808TX FastEthernet 8 Port Hub	$805
Intel Pro 100 PCI FastEthernet	[illegible]
Intel Pro 100 PCI Server Adapter	$695
Intel Pro 100 Smart FastEthernet	$819
Intel Express 10/100 Stackable Hub	$845
Intel EC100TX Express 100Base-TX 16 Port Hub	$6120
HP Networks 10/VG PCI Adapter	$175
HP DeskDirect 10/100TX PCI FastEthernet Card	$130
Netgear FA310TX 10/100 PCI FastEthernet	$85
Netgear FE104NA 10/100 4 Port Hub	$257
Netgear FE108NA 10/100 8 Port Hub	[illegible]
SMC Etherpower 10/100Base-T PCI	$110
SMC Etherpower 10/100 PCI Dual Channel	$325
SMC 5208tx TigerHub 10/100 8 Port Hub	$655

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1.05GB	ST31055W	9ms	512K	5411	ULTRA WIDE	$435
2.1GB	ST32171N	9ms	512K	7200	ULTRA SCSI	$675
2.1GB	ST32171W	9ms	512K	7200	ULTRA WIDE	$740
2.1GB	ST52160N	11ms	128K	4500	ULTRA SCSI	$340
2.3GB	ST32272N	9ms	512K	7200	ULTRA SCSI	[illegible]
2.3GB	ST32272W	9ms	512K	7200	ULTRA WIDE	$765
4.3GB	ST34371N	9ms	512K	7200	ULTRA SCSI	$890
4.3GB	ST34371W	9ms	512K	7200	ULTRA WIDE	$1055
4.5GB	ST34572N	9ms	512K	7200	ULTRA SCSI	$1020
4.5GB	ST34572W	9ms	512K	7200	ULTRA WIDE	$1080
4.5GB	ST34501N	7.5ms	512K	10000	ULTRA SCSI	$1145
4.5GB	ST34501W	7.5ms	512K	10000	ULTRA WIDE	$1215
9GB	ST19171N	9ms	512K	7200	ULTRA SCSI	$1580
9GB	ST19171W	9ms	512K	7200	ULTRA WIDE	$1635
9GB	ST19101N	7.5ms	512K	10000	ULTRA SCSI	$1790
9GB	ST19101W	7.5ms	512K	10000	ULTRA WIDE	$1880
23GB	ST423451N	13ms	2MB	5400	ULTRA SCSI	$3150
23GB	ST423451W	13ms	2MB	5400	ULTRA WIDE	$3240
2GB	WD2170-0003	8ms	512K	7200	ULTRA SCSI	$640
2GB	WD2170-0007	8ms	512K	7200	ULTRA WIDE	$670
4GB	WD4360-0003	8ms	512K	7200	ULTRA SCSI	[illegible]
4GB	WD4360-0007	8ms	512K	7200	ULTRA WIDE	$960

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VBPlus	166mmx	16MB	2.1GB	10X	12.1 TFT	$4,900
VBPro	133mmx	16MB	1.4GB	10X	12.1 TFT	$4,500
VBPro	166mmx	32MB	2.1GB	10X	12.1 TFT	$6,300
VB[illegible]	166mmx	32MB	3.0GB	10X	13.3 TFT	$7,000
VB[illegible]	166mmx	16MB	2.1GB	10X	13.3 TFT	$6,750

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800CT	P133	16MB	1.4GB		10.4 TFT	$4,575
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5700CT	150mmx	16MB	2.1GB		12.1 TFT	$6,180
5700CT	166mmx	16MB	2.1GB		12.1 TFT	$6,420
5700CT	166mmx	32MB	3GB		12.1 TFT	$7,400

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Model	CPU	RAM	HDD	CD	Display	Price
[illegible]	[illegible]	16MB	1.4GB	10X	12.1 TFT	[illegible]
6050MH	150mmx	16MB	2.1GB	10X	12.1 TFT	$5,880
[illegible]0NT	150mmx	16MB	2.1GB	10X	12.1 TFT	$6,4[illegible]
6200MX	166mmx	32MB	2.1GB	10X	13.3 TFT	$8,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

IBM
ThinkPad

Model	CPU	RAM	HDD	CD	Display	Price
[illegible]	P150	16MB	[illegible]		12.1 DSTN	[illegible]
380D	P150	16MB	1.35GB	8X	12.1 DSTN	$2,720
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] TFT	$4,500
560	P133	8MB	2.1GB		11.3 DSTN	$2,630
560E	P150	16MB	[illegible]		[illegible]	[illegible]
560E	P166	16MB	2.1GB		12.1 TFT	$5,900
[illegible]	[illegible]	16MB	2.1GB		12.1 TFT	[illegible]
760EL	P133	16MB	2.1GB		12.1 TFT	$6,100
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
760XL	166mmx	16MB	2.1GB		12.1 TFT	$5,350
[illegible]	[illegible]	32MB	3.0GB	[illegible]	[illegible]	[illegible]
765L	P166	32MB	3.0GB		13.3 TFT	$8,350
[illegible]	[illegible]	32MB	[illegible]	[illegible]	[illegible]	[illegible]

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1.37GB Hard Drive
2MB EDO Video RAM
12.1" TFT Active
10X CD ROM
33.6/14.4KBps Data/Fax/Voice Modem
Built in Sound System

Satellite 220CDS

133MHz Intel Pentium
16MB RAM exp to 144MB
1.37GB Hard Drive
2MB EDO Video RAM
12.1" Dual Scan
10X CD ROM
Built-in Sound System

Model	CPU	RAM	HDD	Display	Price
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
430CDT	P120	16MB	1.3GB	11.3 TFT	$3,150
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
440CDT	P133	16MB	1.3GB	12.1 TFT	$4,300
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] TFT	[illegible]
510CDT	P133	16MB	2.1GB	11.3 TFT	$4,275
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
530CDT	P166	32MB	2.1GB	12.1 TFT	$6,900
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] TFT	[illegible]
740CDT	P166	16MB	3.0GB	13.3 TFT	$7,600
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] TFT	[illegible]

PCMCIA / MODEMS

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Wired education

Continued from page **14**

students used it for the same reasons 31 percent said it was used for email, but only five percent replied that they used it to answer technology questions or to tap into online databases (the survey allowed for multiple responses)

Email and beyond

Most of you are familiar with the Internet as a giant library with current-to-the-hour information Some educators are developing course work around that feature.

Carol Cassidy, geography teacher at Hillfield-Strathallan College in Hamilton, Ont , projects a Web site using an overhead palette to teach her students how to gather and assess information on specific topics of current interest One such subject has been the raging debate over land mines.

Her students not only learn how to access the Internet but are also immersed in an ongoing political and humanitarian controversy This is active learning with real problems, real debates and "real-time" exchanges

Part of this process, of course, includes such basic lessons as how to print a section of an article, or how to use email to ask questions of the author. Cassidy also has students brainstorm the topic and then do further individual research using Internet search engines such as AltaVista or Yahoo! to sort out what is relevant and what is not They are also asked to decide what category the information falls under is it authoritative, an advertisement, or something else? Information technology, research and current affairs are rolled into a single exercise

Tell me about Everest, Sir Edmund

Students are also using email to pose specific questions to authors or mentors.

Can you remember the name of a single author of a science or math text you used in school? Probably not, yet today's kids, remember and know them because they are conversing with the writers the textbook authors themselves are reviewing! And students are being infused with the insights and enthusiasm that the original investigators can convey

Students taking part in the Adventure Everest project conversed with legends such as Sir Edmund Hillary Marsville participants interacted with Canadian astronauts This type of contact adds a flavor of reality and excitement. Traditional texts are like boiled potatoes by comparison we may all eat them from time to time and still need them, but students are on the verge of becoming gourmet diners of information, people and issues.

The Internet is also being drafted as a vehicle for delivering resources and projects for both classroom and teachers. Carleton University's SchoolNet, which offers online interactive projects and downloadable resources, is the model for Internet projects worldwide SchoolNet takes programs directly to schools with Internet connections, rather than requiring teachers to travel long distances to access new materials on "professional development" days Some projects are collaborative and students share data with kids in other schools around the world to complete research assignments.

Dialogue, discussion and debate

And for high school students it means that problem solving, searching and communicating are not just a classroom affair for a grade They are learning to ask questions of professionals

Many teachers at high school or college level are encouraging students to make use of the thousands of Internet discussion groups on everything from 17th century English literature to robotics.

A directory for such groups, called Liszt, contains information on over 71,000 discussion groups Subscriptions are usually free. Students can sit in and read posted questions and answers or post their own Replies come from experts and amateurs all over the world. The interchanges add zest to topics that are dry in a textbook and add enrichment for classroom discussions.

Bernard Duyfhuizen, head of the English department at the University of Wisconsin, in Eau Claire, has found that groups such as Listserv can "wake" a student up and encourage them to research and think about a particular author in greater depth

Collaborative learning

Another way that computers and the Internet are changing the way kids learn and solve problems is the beginning wave of interactive projects that is becoming available.

While Cassidy develops her own projects, a significant number of internet sites are becoming available that have structured programs already developed Many of these involve sharing information with other schools across the county or globe, such as Adventure Everest from CCT Software Plus or the Canada 2000 project being developed by The Heritage Project at the CRB Foundation

Other sites have problems, solutions, frequently asked questions (FAQs), resource lists and mentors, who can be anyone from older students to experts. These provide teachers, parents and home schoolers with an additional resource

But what is so important is that they make learning "active," exposing kids to experts and requiring them to be involved I find it amazing that so many people donate time and energy to helping and encouraging kids in this way

The library function, email and Internet projects all fulfill an essential need for Canadians stretched out in a thin ribbon over thousands of kilometers: they let users communicate as if they lived next door. No longer are they dependent on colleagues or friends for the exchange of information Nor do they have to travel 1,000 or more kilometers to a conference.

Because messages can be sent and replies received in less than an hour without running up a huge phone bill and questions may be thrown out at large to the community online, geographic barriers are becoming less relevant.

Converging media

Television gave kids a passive but colorful look at what else was going on in the world. But you can't "pause" the television and ask the character what she thinks about land mines or how he learned to program in a certain language.

But the Internet is changing that too. For example, the *Scientific American Frontiers* series with Alan Alda on PBS has ➤

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several "stories" on science and technology in each episode. The scientists featured in each of these are available to answer questions on the corresponding Web site after the segment airs

The CBC's news programs also offer Web sites with additional information on stories and a springboard from which to email the writers or editors for more information or to share ideas at a site called Newsworld Interactive ❑

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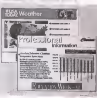

Pushing education info to educators • Educational software publisher Davidson & Associates has announced an Internet push service aimed at teachers and education administrators.

Called Educast, the service is expected to be available later this fall. According to Davidson, the service will deliver information relevent to educators. The content will be organized on a number of channels, such as USA Today Lesson Plans, Professional Information and Education News.

While much of the content and links appear to be U.S.-oriented (e.g. references are to U.S. job banks and educational grants), there may be non-country specific information that will be useful for Canadian educators.

A beta version of the Educast software can be downloaded at http://www.educast.com.—DT

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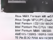

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Intel Pentium processor & Triton chipset
16 mb ram & 7ns pipeline cache
1.6gb hdd & 15" mtr, 16X cdrom & Wave 32
S3 Virge 2mb video & 33.6 PCtel vfx modem
Ms-Windows 95 cd ver installed & configured

P 133	$1347	or lease $50 /mth
P 166	$1431	or lease $53 /mth
PenII-233(Kimth)	$2228	or lease $82 /mth
PenII 266(Kimth)	$2448	or lease $91 /mth

ULTINET TOWER PKG #TCP2
Intel Pentium processor & Triton HX chipset
32 mb EDO ram & 7ns 512k pipeline cache
2.1gb enh ide hdd & 15" Intelliview .28dp mtr
S3 Virge 2mb video & USRobotic 33.6fx mdm
16x cdrom & Creative Labs SB16 OEM sound
Ms-Windows 95 cd ver installed & configured

P 166MMX	$1612	or lease $60 /mth
P 200MMX	$1781	or lease $66 /mth
P 233MMX	$1996	or lease $74 /mth
PenII-233(Kimth)	$2420	or lease $90 /mth
PenII 266(Kimth)	$2641	or lease $98 /mth

ULTINET TOWER PKG #TCP6
Intel Pentium processor & Triton HX chipset
32 mb EDO ram & 512k 7ns pipeline cache
SCSI (3.1gb hdd &16X cdrm) Adptc 2940 ctrl
17" Intelliview .28dp mtr & SB16 Oem sound
S3 Virge 2mb video & USR 33.6 fx modem
Ms Windows 95 cd ver installed & configured

P-166MMX	$2451	or lease $91 /mth
P-200MMX	$2615	or lease $97./mth
P 233MMX	$2835	or lease $105 mth
PenII 233(Kimth)	$3259	or lease $121 /mth
PenII-266(Kimth)	$3479	or lease $129 /mth

ULTINET TOWER PKG #TCP16
Intel Pentium processor & Triton HX chipset
64 mb EDO ram & 512k 7ns pipeline cache
4.1gb enh ide hdd & 17" Intelliview .28dp mtr
S3 Virge 2mb video & USR 33.6 fx modem
16x cdrom & Creative Labs SB16 sound card
Win NT Wrkstn V4.0 installed & configured

P-166MMX	$2343	or lease $87./mth
P 200MMX	$2512	or lease $93./mth
P-233MMX	$2727	or lease $101./mth
PenII-233(Kimth)	$3042	or lease $113 /mth
PenII-266(Klamath)	$3262	or lease $121 /mth

ULTINOTE/CD Model 7200 PKG #TCP11
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2mb video ram & 33.6 vfx modem, 2x Pcmcia
Approx 2hrs battery life & Ms Windows 95 cd

P 166MMX	$5016	or lease $186 mth
P-200MMX	$5190	or lease $192 /mth
P 233MMX	$5409	or lease $200 /mth

ULTINET SPECIAL EDITION #6
Intel Pentium processor & Triton chipset
16 mb ram & 7ns pipeline cache
2.5gb hdd & 15" mtr, 12X cdrom & Wave 32
S3 Virge 2mb video & 33.6 PCtel vfx modem
Ms Windows 95 cd ver installed & configured

P-133	$1390	or lease $51 /mth
P 166	$1474	or lease $55 /mth
PenII-233(Kimth)	$2271	or lease $84 /mth
PenII-266(Kimth)	$2491	or lease $92 /mth

ULTINET TOWER PKG #TCP3
Intel Pentium processor & Triton HX chipset
32 mb EDO ram & 512k 7ns pipeline cache
3.1gb enh ide hdd & 15" Intelliview .28dp mtr
S3 Virge 2mb video & USR 33.6 fx modem
16x cdrom & Creative Labs SB16 OEM sound
Ms-Windows 95 cd ver installed & configured

P 166MMX	$1654	or lease $61 /mth
P-200MMX	$1823	or lease $67 /mth
P 233MMX	$2039	or lease $75 /mth
PenII-233(Kimth)	$2462	or lease $91 /mth
PenII 266(Kimth)	$2682	or lease $99 /mth

Parts & Upgrade section

Triton mbd with 256/512k cache	$88/98
Triton HX/TX mbd with 512k cache	$108/148
ASUS Triton HX mbd/w512k cache	**$168**
PentiumII(Klamath) mbd	$29
16mb(2pcsx8) or 32mb (2x16) ram	$72/144
TV tuner card for any PCI system	$148
CPU s P133/P166/	$151/$227
CPU s (with MMX) P166/P200/P233/PII-233/266	$201/358/558/820/1028

(cpu's and ram sold with mbd only)
Fast service and upgrades done for any system

ULTINET TOWER PKG #TCP17
Intel Pentium processor & Triton HX chipset
64 mb EDO ram & 512k 7ns pipeline cache
SCSI (4.5gb ultra wide hd, 16X cdrom) Adptc 2940UW ctrl, 17" Intelliview .28dp mtr & SB16
S3 Virge 2mb video & USR 33.6 fx modem
Ms Windows 95 cd ver installed & configured

P-166MMX	$3341	or lease $124/mth
P-200MMX	$3510	or lease $130/mth
P-233MMX	$3725	or lease $138/mth
PenII 233(Kimth)	$4149	or lease $154/mth
PenII-266(Kimth)	$4369	or lease $162 /mth

Clearance Corner (New or refurbished units) P-100 32mbram,4Xcdrom,1.6gb,33.6vfx $645 P-133 32mbram,4Xcdrom 1.6gb 33.6vfx $711 P-166,32mbram,4Xcdrom 1.6gb 33.6vfx $770 PPro-180, 32mbram 8X,3.1gb,33.6vfx $1280 486DX4/75 ntbk only 4lbs, 8mb 520hd $1445 P-100 ntbk,10.4" dualscan, 16mb, 1gb hd $1365 P-133 ntbk,10.4" dualscan 16mb, 1gb hd $1795 P-133 ntbk,10.4" active, 4Xcd 16mb 1gb $2295

Upg S3 Virge 2mb to 4mb/Matrox Mystique 2mb (OEM)	**$60/380**
Upgrade S3 Virge 2mb to Matrox Millenium 4mb/8mb (OEM)	**$210/465**
Upgr ntbk 1.3gb hdd to 2gb, reg HX mbd to ASUS with 512k pipeline	**$180/65**
Upg SB16 OEM to SB32OEM, or SB64AWE Value edtn /TV tuner	**$55/$118**
Upg 32mb EDO ram to 64mb ram (32mbx2)/16X to 24Xcdrom	**$199/$40**
Upg HX to TX mbd with 10ns(Watch for cheaper 12ns/20ns SDRAM) (but our HX mbd with EDO ram outperforms any TX with 10ns SDRAM by 10%)	**$95**
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- 8MB 60ns EDO RAM Exp. 128MB
- 1.7GB EIDE hard drive, Mode 4
- 3.5" 1.44MB floppy disk drive
- PCI EIDE w/2x16550UART Serial 1xBi-Directional Parallel
- Cirrus Logic 5446 64bit Graphics Card, 1MB DRAM Exp.2MB
- 14" 1024x768 N I L R 28dpi
- 15" Mini-tower case with 200W
- Logitech 2B mini mouse
- 104 Windows 95 Keyboard
- 12X EIDE CD ROM Drive
- Two years parts & labour limited warranty

8MB EDO
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14" Monitor
12X CD

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- Ball Bearing Spring Mount CPU Cooler
- 16MB 60ns EDO RAM Exp 128MB
- 2.1GB Ultra ATA hard drive,
- 3.5" 1.44MB floppy disk drive
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- Diamond 3D 2000 2MB Exp. 4MB
- SONY 15" 100SX N I L R 1280 x 1024 25dpi
- 15" Mid-tower case w/ 200W CSA Power Supply
- Logitech MouseMan 3B mouse
- 104 Windows 95 Keyboard
- 12X EIDE CD ROM drive
- Soundblaster 16bit PnP (Creative)
- GNT 850 3D Stereo Speakers W/Bass Control
- DigiCam 33.6 V34 Voice Fax/Modem Internal
- *Microsoft Windows95 2CD with Manual*
- Two years parts & labour limited warranty

16MB EDO
2.1GB HD Ultra ATA
SONY 15" Monitor
12x CD
33.6 Voice Modem

Power Plus

Pentium® -166Mhz MMX $2635

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- 32MB 60ns EDO RAM Exp 128MB
- 3.2GB Ultra ATA hard drive
- 3.5" 1.44MB floppy disk drive
- PCI EIDE, w/2x16550UART Serial 1xBi-Directional Parallel
- MGA Mystique 220 3D Graphics w/ 4MB WRAM Exp. 8MB
- Viewsonic 17" G771 N I L R 1280 x 1024 27dpi
- 19" Mid-tower case with 200W
- Logitech MouseMan 3B mouse
- 104 Windows 95 Keyboard
- 24X EIDE CD-ROM drive
- Soundblaster AWE 64 PnP
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3.2GB HD Ultra ATA
Viewsonic 17"
24x CD
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Intel P133	$1795
Intel P166 / Intel P166 MMX	$1838 / $1889
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Intel P150	$2554
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480CDT	P150MMX / 32MB / 2GB / 12.1 TFT 10X CD-Rom	$5540
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VB, C++ classes for pre-teens

BY JEAN ALLEN-IKESON

Where are the junior Bill Gates of the future being hatched? Forget Silicon Valley and insert a suburb of Winnipeg. Yep, Winnipeg.

In weekly sessions during the winter or as half-day for-a-week camps in the summer at Computers for Kids, children from nine to 16 are immersing themselves in game development as a paradigm for learning programming in Visual Basic and C++

The organizers, Elliot Bay and Bob Burgess, are overflowing with enthusiasm and evangelical zeal for what young kids can do with programming. They listen to the kids and teach the kind of programming kids have been asking for. Burgess also takes special care in training instructors writing manuals, and preparing the kind of questions to keep kids learning and enthusiastic.

Many people initially think they are crazy to teach such young children to program, especially with professional-level languages. But Elliot Bay points out that "Visual Basic allows us to teach at a younger age, because it has ready made objects."

Thus, Computers for Kids is no ordinary watered-down software safari. It jumps directly to the programming languages in demand by business (check the classified ads in any newspaper) but uses a game format because today's kids have been weaned on computer and Nintendo-type games. As a result, they understand the sort of structure to head for with the code

Moreover, says Elliot Bay a math major turned Pied Piper for junior programmers, game development teaches more math than business applications So when students need to figure out if two beasts are going to collide, they learn to use such concepts as absolute value functions or the equation for a circle.

How many kids in the Winnipeg area could *really* be interested in programming? Last winter (maybe that's the key!), they averaged 86 kids per week in classes. This summer they had 10 kids a week in for five different sessions doing just Visual Basic By the end of July, they already had 100 kids signed up for Visual Basic in the fall!

Though these camps are non-residential, they have received enquiries from as far away as New York City from parents desperate for this sort of opportunity for their children They all seem to plea for something like Computers for Kids closer to home Unfortunately, there are no franchise plans for the near future

Burgess and Bay are developing a new course at the Grade 9 to 11 level on three-dimensional C++ game development What kids could come out with is the ability to create games that look like smaller-scale sanitized versions of Doom.

Another unique aspect of their business is that, rather than renting computers and space in a strip mall, they share space and computers with Automated Design Systems, an engineering company that uses and also teaches computer-aided manufacturing and design. In the winter, they use computers at night that would otherwise be idle In the summer, they share them with the engineers. It is not as big a problem as it could be, because Burgess and Bay keep the classes to a maximum of four kids, which means each ch86 receives intensive personal attention

The cost is $24 to $28 an hour in the winter and $337 per week for half-day week-long summer camps. ☐

Contact: Computers for Kids,
1300 Buffalo Pl., Fort Garry, Winnipeg, Manitoba,
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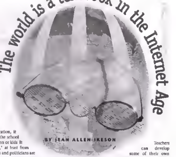

BY JEAN ALLEN-IKESON

Jason and Marie are working on a class project with Guy and Samantha. What is interesting is that the first two are in New Brunswick, while the others are in B.C.
Their teachers are in the classroom, but they also learn from part-time mentors in Central America, at NASA and across Canada. Paper and pencils have been supplanted by keyboards and modems.

Welcome to the burgeoning world of interactive Internet projects They are just the tip of the iceberg: the tip in terms of involvement and the breadth and scope of online interactive school projects Some are Canadian made and intended primarily for Canadian students, such as The Heritage Project. Others are Canadian versions of American initiatives in science, such as the Marsville Project. Still others are commercial enterprises that involve hundreds of thousands of students and teachers around the world in an ongoing research project, such as MayaQuest from MECC.

Most provide teachers with online lesson plans or guides to the projects. To students they offer mentors, who are often leaders in their field for example, world-class scientists.

So what is the point to all this? Computers and modems are a tool to increase students' *active* involvement in learning and problem solving in the real world and in global or at least national issues Teachers are moving further away from the "I know it you listen and learn it" mode, to become guides who simultaneously suggest direction open doors to problems and places, and take part in learning

While this is an oversimplification, it means no more cruising through the school year on automatic pilot—for teachers or kids It boosts "whole learning initiatives," at least from Grade 3 on, at a time when parents and politicians are pushing "back to basics."

Up to now much of school curriculum has been packaged, and after the fact whether it was math, English or science. Students were asked to solve math problems found in work books or recite scientific discoveries made five or 100 years ago Now, ongoing Internet projects provide the real-world textbook and framework for problem solving in the present.

Studying the planets? Follow NASA missions as photos and data are transmitted back to Earth and copied to the Internet; keep pace with Canadian climbers as they make their way to the summit of Mount Everest or watch and correspond with archaeologists and anthropologists as they attempt to solve the mysteries of the rise and fall of the Mayan civilization

Teachers can develop some of their own projects around these online events or make use of lesson plans, resources, or "resocerers" provided by the projects

Canadian heritage

The Heritage Project, which originated in Montreal and is sponsored by the CRB Foundation, started in 1987, using television, but has moved onto the Internet, giving developers the capacity to grow and be more flexible, according to project participant Deborah Morrison

The CRB—a private foundation started by the Bronfman

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Continued from page **28**

family—co-sponsors the Heritage Project with Apple Canada, Canada Post, CMHC, McLelland and Stewart and the Microsoft Network. The Heritage Project was launched in 1991 to raise awareness of the diversity and depth of Canadian heritage.

Some of the project's earlier Internet experiments included a postage-stamp design contest and a Canadian heroes project. The latter was intended to stimulate discussion among students on what a Canadian is and what a hero or heroine is. These can still be found on the Internet site with instructions for teachers on how to use the project in their classroom.

The Heritage Project's latest interactive Internet undertaking is Canada 2000, which is being launched in Newfoundland and Labrador in connection with the 500th anniversary of John Cabot's arrival. The idea is that kids collect historical and cultural information, including oral histories about their communities

These will then be catalogued in English and French for access on the Internet Ideas will be shared Target groups are high school to university level. Two pilots are planned. one at Memorial University in St. John's, with a team of academics working with students and another in Toronto lead by Kidnergy, which is all student-driven.

Typical of Internet projects, the participants take an interactive role in shaping the project. According to Morrison, "If you build it, they will come But what will they do with it " The project is open to schools or home schoolers, provided they have a password, which is available from the Web master on the site.

Cross-country learning tour

On the other side of the country B.C.-based CCT Software Plus and VR Didatech are sponsoring the Canadian Heritage Interactive Journey, which is scheduled to begin April 14, 1998 Two bicycle teams of students will leave simultaneously from Newfoundland and British Columbia to meet in Ottawa.

The idea is for each team to experience the culture, heritage language and lifestyles of the communities they pass through But these students will take with them other students from across the country via the Internet The virtual travelers will follow the journey's progress, sponsor the team locally via their school and submit the heritage of their own community on the Internet.

This month, schools will be asked to submit proposals outlining what they would do if they were chosen to host a bicycle team for a day They will also profile their community. including its history traditions and unsung heroes

"More than an exploration of history and a rediscovery of who we are the Heritage Interactive Journey will be a vehicle for connections, communication and collaboration," according to Blake Edwards at CCT Software Plus.

Each team will travel with a digital camera, laptop and an Internet connection Daily reports will be posted on the Web site Schools will be able to send questions via email to the teams and responses will be posted on the site The goal is a made-in-Canada project incorporating multimedia approaches to teaching Canadian history, geography and culture.

CCT hopes to model this program after its successful involvement in Adventure Everest Online It followed Canadian and American climbers who went to Mt Everest in April of this year and included Canadians Alan Hobson and Jamie Clarke in their third attempt to scale Everest Over 100 online activities tied to curriculum involved students in following the climbers' quest and struggle to fulfill their dream.

Over 150 000 kids from Grades 4 to 12 learned about hardships and setbacks, and stimulated problem-solving sessions A high school teacher and veteran climber from Alberta, Dave Vavra-Rodney, was stationed at the Everest base camp to provide daily communication with participating schools

Down Mexico way

Still more adventure and study was found this year on the MayaQuest site from MECC, the developer of Oregon Trail, one of the earliest successful educational programs that last year celebrated its 25th anniversary

MayaQuest also began its life as an educational game Using a similar theme, a team of five real "explorers" cycled to archaeological sites in Mexico and Central America For the third consecutive year, they collaborated with onsite scientists who were attempting to unlock why the Mayan civilization collapsed.

Carrying high tech equipment, the five explorers are linked to over a million students in classrooms around the world The students tapping into the quest, interacted with archaeologists and experts online, viewed images of the trek, and studied the Mayans and contemporary Central American culture

Still on the site and open to anyone are the questions asked by kids and answers of 20 experts. The entire file runs hundreds of pages so there are lots of opportunities to learn interesting facts first hand. The MayaQuest expedition and site are interactive learning at its best. Don't finish the school year without it!

On to Mars

After the Challenger crashed in 1986 the families of the crew started an educational program called the Challenger Center for Space Science Education. The goal was to use space exploration as a theme to foster a long-term interest in math, science and technology Their project, called Marsville, has been adopted across North America with additional local sponsorship.

Students from Grades 5 to 8 work in groups to build simulations of the first (human) habitat on the planet Mars Participating teachers attend a seminar in the fall to ensure success in the program (applications are available each fall on the Enoreo Web site—an initiative of the Education Network of Ontario that is accessible to students and teachers)

Each group of kids builds a habitation system model air supply communications food production and delivery, recreation, temperature control, transportation waste management, water supply or energy For example, the food production and delivery group must learn about nutrition requirements, potential sources of protein on Mars, how food might be grown on Mars and long term storage

Kids also use the Internet to share ideas

Continued on page **32**

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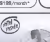

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*Continued from page **30***

with kids in other schools and private sector mentors at places such as Spar Aerospace and the Canadian Space Agency.

Then the groups combine their efforts into building a habitat that is demonstrated at Marsville a collective gathering of students and teachers to showcase the end results on Link-Up Day An important aspect of the project is that students must learn to use email to communicate with other team members. And on Link-Up Day they are responsible for explaining and defending their habitat to other teams

On April 26, the Ontario Science Centre hosted the gathering. Canadian astronauts, Marc Garneau and Dave Williams, spoke to the future Martian explorers via a link to their training facility in Houston. Participants shared their designs with other students across the country via videoconference

This year according to coordinator Sheila Rhodes, there will also be an online double-credit course in environmental science and information technology for Grade 12 students (advanced level for Ontario students)

Another Internet project will be to plan and design a community centre with high school students mentoring students in Grades 4 to 8 These elementary level kids will go through the planning process to create companies on a Web site each student will assume a role in the town design team such as architect, engineer, or town planner. They will create a logo and Web pages on the Enoreo server, which can be shared with other schools. These last two programs are intended for publicly funded schools in Ontario, whereas Marsville is a national program.

Virtual biology

For a totally different sort of interactive Internet project students can try the Virtual Frog Dissection Kit, which comes from the Lawrence Berkeley National Laboratory This is a sophisticated project—available in seven languages—with tutorials, an overview, and interactive dissection of a frog to teach anatomy You can rotate the frog and view different layers. The site has won a number of awards for excellence It is, to a word, impressive.

...and leapfrogging to math

Question. A frog jumps down a well that is 30 ft. deep. It climbs up 3 ft. per day, but then falls back 2 ft. How many days does it take for the frog to climb out.

No, the answer is not 30 You'll have to visit the Ask Dr. Math Web and go to the "Elementary Problem of the Week" to find the answer, as well as more math questions and puzzles for kids from Kindergarten through high school.

In 1994, students at Swarthmore College—a small but exclusive community service-oriented liberal arts college near Philadelphia, Penn — rebuilt a site and expanded it to include an index of frequently asked questions (FAQs) on every imaginable math topic and a list of mentors to answer new ones Soon they had more questions than they could answer and a call was put out to mathematicians around the world The site became Ask Dr. Math, and now hundreds of "Doctors" take part in encouraging kids to view math as a great subject.

Kids submit questions via email or through filling out a form at the Web site. All these and the FAQs are archived and searchable. A great resource for schools, teachers and students ❑

Contacts:

Adventure Everest and the **Canadian Heritage Interactive Journey**: http://www.cctown.com

Carver Valentine School: This California school's site has six pages of resources for kids and teachers: http://www.san-marino.k12.ca.us/~carver/links.html

Discovery Net: This page—part of a site operated by an ISP and Web design company in Blue Springs, Missouri—has great links to educational sites http://www.discoverynet.com/html/kids_stuff.html

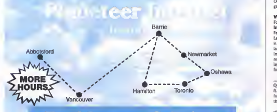
Enoreo and Marsville: Sheila Rhodes. Email. Sheirhod@enoreo.on.ca http://www.enoreo.on.ca/students/student1.htm

Heritage Project: Phone. 800-587-1867 http://www.nmarsem.com/heritage/newtech.htm

MayaQuest: http://www.mecc.com/maya97/team/team.html

NASA: http://www.nasa.gov

Virtual Frog Dissection Kit: http://george.lbl.gov/ITG.hm.pg.docs/dissect/info.html



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Comdex Canada '97 Editors' Choice Awards

As we went to press last month we managed to squeeze in a story on the winners of our annual Comdex Canada Editors' Choice Awards Unfortunately due to the last minute nature of the article, we failed to include all of the winners So here, to recap, are all of the winners

Best new portable: Toshiba Libretto 50CT
This super small portable Pentium PC has its limitations—notably, its diminutive keyboard and inability to recharge the battery while the machine is in use—but for under $3,000 you get a 810 g (1.8 lb) machine with a Pentium 75 CPU, 772 MB hard drive and an active-matrix color screen

Best new personal digital assistant: LG Phenom.
A near-tie, with the Philips Velo and the new Sharp SE-500 "Pilot killer" receiving favorable mentions from our editors. However, the 770 g (1 71 lb) Windows CE 1 1 powered Phenom, with its built-in 28.8Kbps faxmodem carried the day.

Best new video card: Matrox Millennium II
Having already delivered one of the fastest video cards for PCI-based PCs, Quebec-based Matrox has outdone itself with the aggressive price and outstanding performance of its new Millennium II, a card that is up to three times as fast as its predecessor, with more memory, better 3D features and higher resolution to boot—all for under $400

Best digital camera: Panasonic PV DC1000 PalmCam

Panasonic had our favorite unit, the $699 PalmCam, touted as the world's smallest digital camera at 9x6x3 1 cm (3.55x2.36x1 25 in) It includes a glass lens and a built-in color LCD viewscreen and captures images at up to 640x480 resolution

Best gadget we can't afford: Hitachi MP EG1A MPEGCAM
It functions like a camcorder capturing up to 20 minutes of full-motion MPEG video and audio data It has goodies like a 6x zoom and a printing option It can capture 1,000 still images, each with 10 seconds of audio At about $3,500, would we buy one? No, but what a toy to wish for this Christmas

Best low-cost color printer: Lexmark JetPrinter 1000
As the first color printer we've seen that breaks the $200 price barrier, this is not only a fine printer from an initial cost perspective, but it is also notable for its excellent color reproduction

Best professional color printer: Epson Stylus Color 3000
Great value for those who need a printer with Adobe PostScript Level 2, and oversize printing of sheets up to 17x22 inches (full-bleed on tabloid paper!), all for about $1,700 And, as you might expect, the Mac- and PC-compatible Epson's Pantone-calibrated 1440x720-dpi color output is gorgeous.

Best new software application. Adobe Illustrator 7
The program, now available for both Mac and Windows PCs, puts the heat under Corel's tail

Continued on page 40

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Computerizing a school: A case study

BY GEOF WHEELWRIGHT

Personal computers have been in schools now for almost 15 years. In the early days it was the Apple II that quietly snuck into the hallowed halls of learning, taking students by storm and leaving teachers scratching their heads.

I can tell you from personal experience, however, that it is not a great deal easier to make the right computing choices for kids in school now than it was then. From the limited experience I have had in the past year while serving on the technology committee of my daughter's school (Mulgrave School in North Vancouver, B.C.), it requires careful thought and consideration.

As an independent school, Mulgrave is both blessed and cursed with the ability to have a greater hand in the funding and choice of equipment and software than might otherwise be possible. This also means taking a greater share of responsibility for the outcome.

Asking the right questions

The first thing we realized was that the discussion needed to take a step back from "what kind of computers should we buy?" to "how will the computers be used?" This choice also had to reflect the fact that the school had grown in five years from a few dozen pupils and a handful of staff to almost 200 students and staff this fall.

Any decisions we made about how the computers were to be used had to be consistent with the steep growth the school was experiencing. We also had to take into account the fact that there were already half a dozen Apple Macintosh systems in the school.

The first recommendation the committee made—and something that was heavily influenced by suggestions from the teachers and staff at the school—was that we should buy computers and software with in-classroom use in mind. There was to be no dedicated "computer lab." There were two reasons for this.

The most practical was that it simply didn't make much sense to use valuable—and scarce—classroom space for this purpose. The second, and perhaps more important, reason was that parents, teachers and staff alike felt that computers should be part of the everyday classroom environment in all subjects.

Whether students were using the computers to type book reports or science projects on a word processor or to research history or geography using a CD-ROM encyclopedia (or indeed, the World Wide Web), the idea was that computers would be as natural a classroom tool as pens, paper, chalk or a blackboard.

This proved to be a fundamentally sound approach as it removed computers from a ghetto "over there" and made them a tool that everyone could conceive of using, no matter what kind of work they were doing in the classroom. There have also been some quite creative non-classroom uses for the computer.

Several parents, for example, worked together to create a Web site for the school (at http://www.trainingnet.com/mulgrave/) which has proved to be a wonderful place to gather together news about school events (with pictures either scanned or taken with a digital camera), online copies of weekly school newsletters, the parents' handbook, biographies of teachers and staff, and a section for contributions by each classroom in the school.

In the fall, it is hoped that students and teachers will be able to contribute further to the Web site and show off the best of students' work online. Conventional productivity applications, including Microsoft Publisher 97, Office 97 and FrontPage 97, were used to create many of the Web pages and will be the general tool used by staff, teachers and students to author their own pages.

What we learned

Several lessons have emerged from this process. The first is that training is invaluable. Members of the technology committee conducted training sessions for teachers on several nights following the installation of the computers and the network after Christmas 1996, but a lot of the real learning—and many of the key questions—have emerged as teachers and students have worked with the computers over the first six months.

Training in any kind of formal setting is always a tough task in schools. Teachers generally have more than enough to do in trying to handle the many day-to-day responsibilities placed on them without further burdens being placed on them with hours of set training course time. One approach that seems to have worked is to show teachers the kinds of things that are possible and then make time available to them as help is needed.

The same approach has worked well with software selection. Through a number of parents who already owned educational applications, we gathered together a number of classic application types (e.g., a world atlas on CD-ROM, an encyclopedia, some French language software, a variety of reference materials, some creative writing tools and so on), demonstrated them to the teachers and encouraged them to "play" with the applications so that they could see what they liked and did not like.

After that, we used the feedback from the teachers to pull together a list of recommended software that we passed to the school board for approval. The idea was to ensure that the school did not have to spend money on software that was not going to be useful to students or teachers.

Continued on page 88

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Continued from page **34**

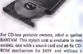
and raises the bar for professional vector graphics apps for professional design and production tasks As you might expect from the inventors of the PostScript page description language, Illustrator 7 speaks PostScript fluently and, for the first time, offers accurate on-screen color with its CMYK display.

Best digitol video player: RealmagicDVD
The RealMagic product was truly superior, and at only about $50 more than its competitors, not unreasonably priced.

Best new digitol video technology: DPS Spark Firewire Adapter
At $1,325 with a full version of Adobe Premiere or $930 without the software The DPS Spark is the lowest-cost Firewire card we've seen that handles both in-and-out functions making all-digital transfers of high quality digital video possible at prices that surely make owners of professional-level analog equipment cringe

Best new storage technology: Pinnacle CD RW
Pinnacle's $799 rewritable compact disc system represents one of the best ways of recording data onto a disc that can be read by a vast array of machines currently in the workplace. Encouragingly, the Pinnacle rep says that the unit reads 98 percent of existing CD-ROMs and CD-Rs too.

Best new portable add-on: BackPack Bantam parallel port CD-ROM drive



For CD-less portable owners, relief is spelled BANTAM This stylish unit is available in two models. one with a sound card and an 8x CD-ROM mechanism for $459 and without a sound card for $399

Best desktop system sound card Creative Labs AWE64 Gold
There are better PC sound cards, and there are cheaper sound cards but our editors unanimously agreed that this card which improves upon several aspects of previous Creative Lab designs, while retaining an impressive level of compatibility, offers the best value.

Best low-cost color scanner: Storm EasyPhoto SmartPage Pro
It s hard to beat the under-$200 price point of the Storm EasyPhoto SmartPage Pro The unit, which attaches easily to any PC's parallel port, easily bested the image quality of competing units from Hewlett-Packard Microtek and Visioneer (which as showing its new Strobe model), and costs less than all of them

Best new color monitors (tie): Optiquest V95 19-inch, Hyundai HL7870S DeluxScan 17-inch
We had to award two outstanding products in this category, although we easily could have awarded several other units as well But we found the just right 18-inch viewable area and superior quality of the $1,500 Optiquest V95 monitor and the unusually small footprint of the inexpensive ($899) Hyundai 17-inch monitor (15 7 inch viewable), with its "short neck" CRT technology, the best of the bunch

Best connectivity product. Xircom Ethernet 10/100 & 56KBax Modem
Combine a modem that is up to 44 percent faster than the average 28.8Kbps modem, and throw in both 10Mbps and 100Mbps Ethernet capabilities and you've got a combo card that is worth carrying around.

Best computer furniture: Herman Miller chairs
On display at the CompuServe@Work booth, these are definitely not cheap and not necessarily to everyone's taste in terms of aesthetics. However, they are seriously comfortable—and, at $1,300 each, they sure as heck should be. ❑

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High fives for latest Psion

Series 5 addresses flaws of earlier palmtops

BY GEOF WHEELWRIGHT

Longstanding readers of *The Computer Paper* will be familiar with the British-made Psion range of handheld computers, the merits of which have been debated assiduously in these pages over the past several years.

The company's most popular range of machine has been the Series 3, a palmtop that was originally released about seven years ago and which can still claim in its original form to do more than some Windows CE machines can do today

Since the release of the original Series 3, the specification of the machine has grown to include more RAM (from 256KB to 2 MB), greater memory and storage capabilities, a vast range of Psion-produced and third-party software, and Internet applications including a Web browser and an email package.

Throughout its history, it has included an ever-better word-processing application (with the ability to save in Rich Text Format or be translated into Microsoft Word-compatible format), a spreadsheet that included features such as built-in graphing and "zooming" before it was ever fashionable to do so on a handheld, and a good collection of time and data management applets.

On the strength of these features, it became (and still is) the best-selling handheld computer in Europe. Yet in North America, it still warrants little more than a blip on the radar of those tracking this young sector of the PC industry

The knocks against it have always been that the keyboard was too small to touch-type, the software did not use either DOS or Windows and therefore was not compatible (despite the fact that excellent two-way file conversion utilities have been available for the machine for the past couple of years) and that it did not offer a pen interface. Some reviewers were almost scornful of the proprietary solid state storage cartridges.

Enter the Series 5

There should be few such gripes about the just-released Psion Series 5 It addresses almost every criticism that has ever been made about the Series 3. It is slightly bigger (although by millimeters and not inches), uses a 32-bit RISC processor (from U.K.-based ARM, which also supplies processors for Apple's Newton and Oracle's Network Computer), and comes with either 4 MB or 8 MB of RAM

It also features a built-in backlight, IrDa-compatible infrared link, and built in fax software (with both send and receive capabilities) It still weighs only 354 g (12.5 oz.) and claims a battery life of up to 35 hours on two AA batteries (which seems to depend on how much you use the backlight)

In addition, there's a CompactFlash expansion card slot that lets you add up to an additional 10 MB storage with the same kind of sub-PC Card device commonly used on many new digital cameras (such as Kodak's DC120) Adapters are available to allow these CompactFlash cards to be read in PC Card slots. In fact, I tried and was successful in getting the Psion Series 5 to read a CompactFlash card that was supplied with a Kodak DC120 digital camera that I have been testing.

The screen, meanwhile, features a "VGA-width" and "half-height" screen resolution of 640x240 pixels. For users of the old Series 3, this takes a little getting used to, as you suddenly find yourself seeing a lot more detail

Continued on page 46

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- -**Mid** ATX Tower Case w/230W Power Supply
- -**104** Win 95 Fujitsu Keyboard
- -**2B** Logitech Mouse with Mouse Pad
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- -**60W** Stereo Amp Speakers
- -**All** parts Menu and Software Drives
- -**Two year** labor and parts warranty

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- -**2B** Logitech Mouse with Mouse Pad
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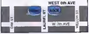


Lots of Parking on Laurel

Psion

*Continued from page **42***

and are able to cram a great deal more on the screen than before. As with previous versions of the machine, however, it is easy to zoom in and out on any application so that you do not feel stuck with any particular size of type.

The interface has been completely redesigned around Psion's new 32-bit version of its EPOC operating system (which the company is currently busy licensing to makers of other handheld devices such as cellular phones). The first big difference you'll notice is that it offers pen support—and a quite stylish designer pen is included in a special compartment of the Series 5 exactly for this purpose. All applications are pen enabled, although none (except the sketch pad) really require it.

One of the biggest changes for me was the slide-forward "touch type" keyboard. It is larger and offers a lot more "travel" than previous Series 3 keyboards. Ironically, I was so used to the older Series 3 keyboard that this took a little getting used to. After spending a little time with it, I have to say that it is a lot more like typing on the keyboard of your average laptop computer.

In terms of sheer fun, the prize feature on this machine has to be the voice recorder. Although voice recording has been available on the Series 3 for a while, it has always been a bit difficult, as you really needed to have the machine open and switched on in order to record a voice message. The redesigned digital voice recorder offers external buttons for record play/stop and rewind so that you can record quick "voice notes" to yourself, even when the Series 5 is closed and switched off. As soon as you hit any of these external buttons, it immediately switches on and begins to play, record or "rewind".

Be aware that this features does suck up battery life and that you'll need fully charged batteries to make the most of it. Also, voice recording takes up 6KB per second of storage space (although that can be reduced to 3KB per second by using a lower-quality recording mode or employing compression). But it is still useful to be able to make a quick voice note to yourself, for example, while driving.

Finally, Psion has realized that PC connectivity needs to be in place from the moment you buy your handheld computer. To this end, Psion has designed what it calls a "seamless connection" to the Windows 95 desktop that makes it a lot simpler to share files and synchronize data with a PC than before. It all operates via a simple desktop icon called My Psion that uses Microsoft's own Internet Explorer code to let you drag and drop files easily between desktop and Psion. Meanwhile, the built-in converter library makes the Series 5 file compatible with Microsoft Office 95, Lotus SmartSuite and Corel Office/WordPerfect suite.

All-in-all this is an impressive redesign of what was already a solid product. As I work more closely with it over the coming months I'll be in a better position to let you know where the bugs and foibles in this product are. But on the basis of my first week's use, I have to say that I am pretty impressed and would certainly recommend it over any Windows CE system I have seen so far.

The only caveat would be if you need immediate Web browser and Internet email capability. While both those features are available for the Series 3, it will be another few months before they are ready for the 32-bit Series 5. If you need those features right away, then you might be better off with a Series 3 or a Windows CE machine.

In the United Kingdom (where this review was done), the 4MB version of the Psion Series 5 costs the equivalent of around $1,000 and the 8 MB version costs approximately $1,150 including the PC connectivity software and British taxes.

Psion Series 5 specifications

Processor

32-bit RISC-based ARM 7100 CPU running at 18.432 MHz

Memory

ROM: Built-in applications stored in 8 MB ROM module.
RAM: 4 MB or 8 MB (capable of storing 2,000 pages of text, 40,000 appointments, or 20,000 database records)
CompactFlash: One slot for up to 16 MB storage on Psion Memory Disk (CompactFlash standard)

Display

640x240 pixels, view full page width, backlit, touch-sensitive. 100 characters x 26 lines with rich text and multiple zoom levels (magnification). 133x50mm (5.25x2 inch) active area

Keyboard

Patented touch-type laptop-style "expanding" keyboard with a large vertical travel, nine off-screen application quick access buttons, five command buttons to the left of the screen

Audio

Microphone for digital sound recording, external buttons for record, stop/play and rewind and silencing alarms, internal speaker

Operating System

EPOC32

Power

Two AA alkaline batteries, one month typical life (35 hours), standard 3 V Lithium backup cell protects RAM while changing batteries (CR2032). Optional external power supply (6 V DC)

Communications

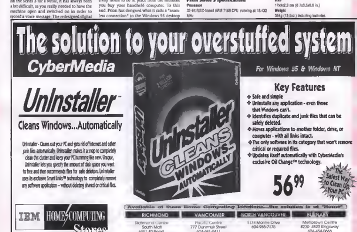
RS232 Fast Serial Port interface to computers, modems, mobile phones, and printers to communicate at up to 115Kbps. IrDA-compliant infrared allowing baud range (up to 1 m) printing and transfer of information (single entries or whole files) wirelessly from a Psion to a suitable printer, a PC or another Psion Series 5.

Size

17x9x2.3 cm (6.7x3.5x0.9 in.)

Weight

354g (12.5oz.) including batteries.



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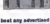

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- [illegible] amplified speakers
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- 14" SVGA .28 N.I. 1024 x 768 Monitor

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What are trusts and how could they benefit you?

You have probably heard of the concept of trusts. Sometimes they are referred to as family trusts, private trusts, or corporate trusts. Generally there is a mystique about the concept of trusts as well as a lot of confusion about what they are and when they should be considered. Many people think trusts are just for the rich or for people with complex financial and investment affairs. That is not the case at all.

Trusts are a very common way of dealing with a range of personal choice family or business options. After you have some additional insights into trusts and their uses, you may come to the conclusion that one or a number of trust options could meet your business and tax planning needs.

Basically, a trust is a legal structure whereby a trustee deals with property or assets, e.g., cash, stocks, bonds, etc., over which the trustee has control, for the benefit of persons called beneficiaries. The trustee could also be one of the beneficiaries. Although the trustee has legal title to the trust property, beneficial ownership rests with the beneficiaries.

There are two main types of trusts: living trusts and testamentary trusts. A living trust (also referred to as an "inter vivos" trust) is established while an individual is alive, and comes into effect once the trust agreement is signed and the trust is funded. A testamentary trust is created under the terms of a person's will and therefore takes life on the person's death. It is funded from the proceeds of the deceased's estate. These trusts serve different purposes and objectives and can have different tax implications.

Here is an overview of how trusts can be used

Living trusts

There are a number of creative ways that you can use a living trust. For example:

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☐ Pentium MMX / K6 166 / 200 / 233	$Call

Memories

☐ 1M / 4M 30pin	$Call
☐ 4M / 8M 72pin	$Call
☐ 16M / 32M 72pin	$Call
☐ 4M / 8M EDO 72pin	$Call
☐ 16M / 32M EDO 72pin	$Call
☐ 32M / 64M DIMM 168pin	$Call

MotherBoards(no CPUs)

☐ 486 256K PCI 72p	$92
☐ M537 VXpro 512K	$85
☐ Giga-byte ATV 512K	$127
☐ Giga-byte ATH 512K	$159
☐ Asus T2P4 HX, 512K	$175
☐ Asus TXP4 512K	$214
☐ Asus P6NP5 P.Pro	$309

Video Cards

☐ ATI Video Exp PCI 2M	$74
☐ ATI TV tuner ISA	$138
☐ ATI 3D SGRAM PCI 2M, OEM	$115
☐ ATI 3D PC TO-TV 2M OEM	$140
☐ Cirrus Logic 5429 VLB	$39
☐ Cirrus Logic 5446 PCI	$31
☐ Diamond Stealth 3D PCI 2MB	$119
☐ S3 Trio 64+ PCI 1MB	$40
☐ S3 3D VIRGE PCI 2MB	$51
☐ Matrox Mystique 2MB SGRAM	$140
☐ Matrox Mystique 4MB SGRAM	$152
☐ Matrox Millennium II 2MB WRAM	$320
☐ Matrox Millennium II 4MB WRAM	$430
☐ Matrox Millennium 4MB WRAM	$245
☐ Trident 8900CL 1MB	$53
☐ Trident 9680 PCI / 9685 PC2TV	$3468

CD ROMs

☐ Acer 12x	$59
☐ Acer 16x	$95
☐ Panasonic 12x	$100
☐ Panasonic 24x	$135
☐ Toshiba 16x	$115

Hard Drives

☐ Quantum 1.2G	$225
☐ Quantum 2.1G	$265
☐ Quantum 2.5G	$295
☐ Quantum 3.2G	$310
☐ Quantum 3.8G	$420
☐ Quantum 6.4G	$Call
☐ W.D. 1.2G	$230
☐ W.D. 1.6G	$249
☐ W.D. 2G	$267
☐ W.D. 2.5G	$292
☐ W.D. 3.1G	$315
☐ W.D. 4G	$405

Floppy Drives

☐ 1.44MB / 1.2MB	$2960

Tape / Drive devices

☐ Colorado T3000 810MB Internal	$252
☐ Zip Drive: parallel, Ext. Int, ext SCSI	$199
☐ Jazz Drive Int / ext. SCSI	$390 / 525

Keyboards

☐ Win 95	$18
☐ Fujitsu 8725, 104 key	$27
☐ Fujitsu 4725 104 key	$57
☐ Ergonomic keyboard	$53
☐ M.S. Natural keyboard	$75

Fax / Modems

☐ Supra Express 33.6k Int. Voice	$77
☐ Supra Express 33.6k Ext. Voice	$140
☐ US Robotics 33.6k Int.	$127
☐ US Robotics 33.6k w/voice, full, Int.	$140
☐ US Robotics 56k w/voice, full, Int.	$235
☐ US Robotics 56k Int. OEM	$215
☐ US Robotics 56k Ext	$270

Cases(with Power supply)

☐ Desktop	$59
☐ Full Tower 25"	$95
☐ Midi Tower 19"	$60
☐ Mid Tower 15"	$42
☐ Mini Tower 13"	$40
☐ 19" ATX cases	$100

Mice

☐ Logitech serial	$21
☐ Logitech PS/2	$29
☐ MS 2 button 3-mouse serial	$32
☐ 2 button serial mouse	$7

Monitors

☐ Acer 15" 56e	$374
☐ Acer 17" 76e	$640
☐ ADI 4V 15"	$425
☐ ADI 5V 17"	$704
☐ Aoile 15" Digital	$295
☐ Daytek 15" Digital DT-1531D	$300
☐ Daytek 17"	$535
☐ Sceptre P51 15"	$355
☐ Sceptre P73 17"	$820
☐ Other model ________	$Call

Printers

☐ Canon BJC 240	$216
☐ Canon BJC 4200	$311
☐ Epson Color 400 / 600	$290$390
☐ HP 692C	$375
☐ HP 820cxi / 870cxi	$395$637
☐ HP 6L	$535
☐ Other model ________	$Call

Sound Cards

☐ Acer soundcard FX 3D	$25
☐ Acer soundcard AW32 Pro	$41
☐ SoundBlaster 16 PNP	$82
☐ SoundBlaster 32	$103
☐ SoundBlaster AWE64 Value	$115

Network Cards

☐ PnP NE2000 Combo PCI / ISA	$35/$38

Other:

☐ Microphone	$6
☐ Headphone with mic, vol control	$13
☐ Speaker Box (amplified 60W)	$18
☐ Speaker Box (amplified 200W)	$35
☐ Win 95 CD Full w/ new system	$115
☐ HP 6020ep	$656
☐ Mitsumi IDE CD Writer	$560
☐ SCSI CD Writer	$Call
☐ Adaptec 2910 PCI SCSI controller	$137

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- **Family trust:** In this situation, you could have some of the shares in a company owned by a spouse held in the name of a family trust. These shares could be non-voting shares. This family trust could be comprised of the other spouse and children. If it is structured the correct way, the monies that would go to the trust by means of dividends could then be distributed by means of dividends to each of the members of the trust. If the members of the trust were not receiving any other income, they could each take out $23,756 of dividend income each year tax-free. If the family members were minors, the attribution rule would not apply if the trust was formed properly. That is, the normal Revenue Canada policy of attributing income to a minor to the parents for tax purposes would not be applicable.
- **Estate freeze:** If you own a company or have other assets that have shown a consistent pattern of growth over a period of time, and you anticipate that that trend will continue, an estate freeze using a corporation set up for the purpose, along with a living trust agreement, could be an effective strategy to consider. The practical effect of this technique is to freeze the value of the assets in your name as of the effective date of the agreement. All future capital gains will accrue to the benefit of your beneficiaries, e.g., children.

There are many other uses of a living trust, including supporting your children, divorce settlements, looking after your financial needs in your retirement, avoiding probate and ensuring the confidentiality of your wishes.

Testamentary trusts

There are a range of uses for this type of trust. As mentioned earlier, these trusts are included in your will. Common options include the spousal trust, trusts set up for minor children or grandchildren, trusts that provide for family members with special needs, discretionary trusts for children who are spendthrifts and gifts for charities.

The selection of a trustee is a critically important part of the process. Many people use a trust company as the trustee or co-trustee. Because of the legal and tax implications of setting up a trust agreement correctly, you should obtain expert advice from a tax accountant and lawyer who deals in wills and estate matters. ☐

Douglas Gray, LL.B. is a Vancouver-based lawyer by training, speaker, columnist and author of 15 bestselling books, plus a real estate investment software program. His books include The Complete Canadian Small Business Guide *and* Home Inc.: The Canadian Home-Based Business Guide *(both published by McGraw-Hill Ryerson) and* Start and Run a Profitable Consulting Business *and* Marketing Your Product *(both published by Self-Counsel Press).*

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Pentium 166	Pentium MMX 166	AMD K6 P200	Pentium MMX 200(TX)
◆M537 Pentium VX MB w/512k ◆Pentium 166MHZ cpu ◆16MB EDO RAM ◆C.L. 5446 pci 2MB VideoCard ◆Fujitsu 1.44 Floppy ◆W.D. 1.6GB HardDriver ◆15 Tower Case W/230 ◆Supra 33.6 W/Voice Modem ◆Acer 16 3d SoundCard ◆Acer 12X CD-ROM	◆GIGA Pentium VX MB w/512k ◆Pentium MMX 166Mhz cpu ◆32MB EDO RAM ◆S3Virge 3D pci 2MB VideoCard ◆Fujitsu 1.44 Floppy ◆WD 3. GB HardDriver ◆15 Tower Case W/230 ◆Supra 33.6 W/Voice Modem ◆SoundBlaster 16 SoundCard ◆Acer 16x CD-ROM	◆GIGA Pentium HX MB w/512k ◆AMD K6-P200 cpu ◆32MB EDO RAM ◆ATI 3d Xpression pci 4mb Video ◆Fujitsu 1.44 Floppy ◆Quantum 3.2 GB Int HardDriver ◆15 Tower Case W/230 ◆USR 33.6 Int Voice/Fax Modem ◆AWE64 SoundCard ◆Panasonic 24X CD-ROM	◆ASUS Pentium TX MB W/512K ◆Pentium MMX 200Mhz cpu ◆32MB EDO RAM ◆ATI 3d Xpression pci 4mb Video ◆Fujitsu 1.44 Floppy ◆W.D. 4.0 GB st HardDriver ◆15 Tower Case W/230 ◆USR 56K Int Modem ◆AWE64 SoundCard ◆Panasonic 24X CD-ROM
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Ibr Mode Win95 NetWork System
M.S. Win95 5-15 NetWork Card $30
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Plan B $70 off (knowledgeable Buyers)
1st month full service 2nd to 24th month, $30 each service for PARTS warranty policy applied)

CPUs	(approx.)
CYRIX-200 166+	$135
AMD K5-133	$101
AMD K6 200	$275
IBM 6X86 200+ W/FAN	$131
Intel 120MHz Pentium	$135
Intel 133MHz Pentium	$138
Intel 150MHz Pentium	$175
Intel 166MHz Pentium	$180
Intel 166Mhz Pentium mmx	$198
Intel 200MHz Pentium	$382
Intel 200MHz Pentium mmx	$355

Memories (approx.)	
8M EDO 72pin	$36
16M EDO 72pin	$68
32M EDO 72pin	$133
32M SD DIMM	$166
64M EDO 72pin	$480
Parity 8/16M 72pin	$71/115
Dimm 8/16M 168pin	$Call/Fax
Dimm 32/64M 168pin	$197/420
168 pin 16M/EDO	$240/275

MotherBoards	(approx.)
Triton2 vx 512k PBC/MMX	$122
GIGA 586 ATV VX 512K	$114
GIGA 586hx 512k PENT	$142
Asus T2 HX 512k MMX	$174
Asus TX 97E	$196
Intel Venus 440FX P6 ATX	$264
Dual P6 Supra Natoma,AT	$500

Video Cards	(approx.)
DIAMOND STEALTH 3D 2M	$68
ATI Boost 2MB EDO	$71
ATI 3D PCI TO TV	$120
ATI 3D SGRAM 4M OEM	$104
Cirrus 5446 logic PCI	$24
MATROX Millenium 4MB	$225
S3 3d Virge Edo 2mb/4mb	$40/42
PCI Millenium 2/4 WRAM	$235/333

CD ROMs	(approx.)
Superstore CD WRITER 8020	$660
Acer 12X/16X	$80/85
Panasonic 12X/24X	$90/119

Hard Drives (IDE,SCSI)	(approx.)
Western Digital 1 2/1.6GB	$216/229
Western Digital 2 1/2.5GB	$242/267
Western Digital 3 1/4.0GB	$290/366
Quantum 2.5/3.2GB	$268/283
Quantum 3 8/6.4GB	$404/535
Quantum 4.5/9.0GB Scsi	$Call/Fax
Seagate 1.28/2.16GB	$245/310
Seagate 2.5GB 10ms st52520a	$319
Fujitsu 1 2/1.7GB	$240/243
Fujitsu 2 1/2.6GB	$270/300
Maxtor 2.5/5.1	$325/555

Network Cards	(approx.)
16bit ISA Combo Ethernet	$21
3Com Ether PCI 900b/comb	$135/157

Tape Drives, Zips, Jazzes (approx.)	
HP Colorado T1000 int	$148
Iomega Ditto 2.1G Int/Ext	$210/247

Keyboards	(approx.)
Fujitsu 8725/4725	$18/49
Ergonomic keyboard	$52
M.S. Natural keyboard	$65
BTC 104	$13

Fax / Modems	(approx.)
33.6 kbps Internal Voice	$55
Supra 33.6 Voice/W Int OEM	$67
USR 33.6 OEM Int	$105
USR 33.6 INT OEM W/Voice	$119
USR 56K INT Voice OEM	$199
Motorola Surfr 33.6 Ext	$170

Cases (with Power supply) (approx.)	
Desktop 200W	$49
Tower 25/19	$80/45
Tower 15/13	$33/33

Monitors	(approx.)
Acula 15	$274
NEC XV17+	$874
ADI 4V 15/Acana 14	$404/209
Nec C500/M500 15	$453/508
Acer 15/17	$359/601
Viewsonic 17 PS	$945
Samsung OLE 15	$398
ROYAL 14 SVGA	$170
Sceptre 15/17	$348/592
Daytek 15/17	$275/500
SONY 15/17	$523/894

Printer	(approx.)
Epson Color 400	$297
Epson Color 600	$373
Canon BJC 240	$206
Canon BJC 4100	$295
Brother HL 641	$389
OKIDATA ML320T	$441
HP 6L	$498
HP OFFJET 1150C	$1227
HP LaserJet 5	$1227

Sound Card	(approx.)
ACER FX 16	$22
Sound Blaster 16Pnp	$53
Sound Blaster 32Pnp	$94
Sound Blaster 64 AWE	$109

MORE (see Website)

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- . SDRAM 32MB DIMM $170
- . Creative /USR 56k Voice. . $120/180
- . Intel MMX P5-233mhz CPU .. $540
- . Intel Pentium II-266mhz/512k .. $990
- . AMD K6MMX-233mhz... . ...$430
- . Quantum ST(UltraIDE)2 1G. $240

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Intel Pentium 150 Mhz System

- **Intel** Pentium 150Mhz CPU
- **Intel** T2 Chipset motherboard
- 32 MB 60ns EDO SIMM RAM
- 3 0GB EIDE HD
- 1 44MB Floppy
- 20x EIDE CD-ROM
- 16bit sound w / 80W steoro Spkr
- PCI 64bit 2M SVGA Card /MPEG
- 15' AT Case with 230W
- 104 Windows'95 Keyboard
- **Logitech** mouse w / pad

$920

Intel P5-166/200mhz.. $960/1080
AMD K5-133/166mhz ..$660/900
IBM 6x66-166mhz.......$880
Intel P5-MMX166/200mhz..$990/1120
AMD K8-166/200/233..$970/1080/1200

Optional (w/system only)

MS Windows'95 full version on CD			+$100
15" SVGA	+$290	17" SVGA	+$530
ViewSonicG771	+$700	ViewSonic17PS	+$900
Sony 100SX	+$480	Sony 200sx	+$580
Microsoft Encarta 97 home pack.			+$70
Creative 33 6 VoiceFaxModem Int.			+$80
USR Sportster Voice 33 6 (up to 56k)			+$125
USR 56k Voice Int / ext.			+$185/270
IO Zip 100M scsi/Parallel (int.ide)			+$190/170
Brother 730DX. $400		HP 5L laser	+$510

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Systems (Basic Level):

AMDK5-133/166............$670/900
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16M EDO 72pin 60ns(up to 256MB)
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Golden MultiMedia Kit $330 00
AWE64, 24x CD-ROM, 180W, Encarta'97 home.

Discovery AWE64 kit $320.00
AWE 64, 12X, Stereo, 9 titles (Encarta97)

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SB 16, 20X, 80W, MS-home

Bechelor MultiMedia Kit $168.00
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Intel P5MMX166/200.....$1200/1330
Intel P5MMX 233 (NEW)..........$1500
AMD K6MMX166/200....$1180/1270
AMD K6MMX 233mhz............$1400
Cyrix 6xMX166/200. .....$1170/1265

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SDRAM DIMM 32MB 10ns 168pin
UltrIDE 2.1GB Quantum FB-ST HD
ATI 3D 2MB SVGA w/MPEG
1.44 Fujitsu floppy
15" SVGA 1280x1024 78hz monitor color
15" Hilevel tower case w/ 230 power
Fujitsu 104 win95 KB and Logitech Mouse

12x/20x/24x cd-rom eide	+$56/96/130
Creative SB16/32/64	+$60/100/120
Creative 33.6K/56K Voice..	+$78/120
USR Spt 33.6 / 56K Voice	+$125/185
Quantum IDE 3.2G/4 3G 6.4G	+$70/$140/250
Sony 100SX/200SX/200SF	+[illegible]/660
Viewsonic [illegible]	[illegible]

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Quan·ST 2.1/3.2/4 3/6.4...$245/310/380/485
Quantum 3.2G/ WD3.1/4.3.....$290/295/380

Printer: BJC4200 ....$275
Epson Stylus 600 (1440dpi)...................$380
Borther 730DX $420

Modem: USR/SPT33.6/56k Voice.$125/185
Creative 33.6 Voice Full-Duplex.......... $78
Creative 56k Voice Full-Duplex..........$120

Monitor: 15" SVGA 1280x1024 .28 ..$290
NEC XV17+ 1280x 1024 .25 ....$870
ViewsonicG771/17PS/PT775..$720/920/1080
Mitsubishi 87MTX 17"..........................$1020

SoundCerd: Creative SB16/64...$58/120

- 16 bit ISA comb Ethernet...............$30
- 32 bit PCI comb Ethernet.. ....$40
- Intel PCI Pro 10/100 ....$90
- 3COM PCI 3C900 comb $110
- 3COM PCI 3C905 100B...... ......$85
- BNC/Terminator/T...........................$3
- Coxal 10ft/20ft/50ft $10/13/25
- Hub 9port /16port $95/190
- Hub 24port 3C16441 ....$580

- Novell Users 5 / 10 ....$900/1280
- NT 4.0 Server 5 /10 ....$880/1280
- NT Wkstn 4 0 / license........$240/60

- UPS 280/450/600 ......$155/200/340
- UPS Smart 600/1000 ....$399/550

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Intel P6 / Pentium-II systems

Intel P6-166/180..........$1700/1720
Intel P6-200(256/512K).$1790/1900

Intel Venus 440FX 2S,1P EIDE, ATX
32M EDO 72pin 60ns
FD 1.44, 3.2GB eide HD Mode 4
Mystique220 3D 4MB w/MPEG
17" ATX Tower case w/ATX power
Fujitsu 8725 104 win95 keyboard
Logitech mouse w/pad

Intel PII(512k)-233/266...$2070/2290
(with Intel PD440 motherboard and Sound card)

Intel Dual PII(512k)-233 x 2...$2950
Intel Dual PII(512k)-266 x 2...$3190
(with Dual PII motherboard and two CPUs)

Intel Dual PPro-180mhz x 2. .$2260
Intel Dual PPro-200mhz x 2...$2580
(with Dual Pro motherboard and TWO CPUs)

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Epson Stylor 600	*$375*
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Viewsonic PT775	*$1080*
Quantum 2.1 ST	*$245*
Brother 730DX laser	*$410*
Viewsonic G771	*$710*
Quantum 3.8G Fireball	*$333*
Intel Pentium 150 CPU	*$140*

MODEMS

Sportster 33.6 int	**$110**
Sportster 33.6k Voice int /ext	**$130/195**
Sportster 56k int./ext	**$185/270**
Sportster 56k Voice int	**$185**
Motorola 33.6 / 56k Voice int	**$140/185**
Motorola 33.6 ext/ 56k ext	**$180/230**
Creative 33.6/56k voice	**$78/$125**
Creative 33.6 ext.	**$150**
33.6 Voice Fax Modem int	**$68**
Roter /Closer	**$available**

(PCMCIA see notebook section)

MOTHERBOARDS

Intel ATX Marl2 512k HX MMX	**$148**
ATX LT430TX 512k 75-233,MMX	$175
Intel ATX Venus P6	**$170**
Intel ATX PRO Dual P6,UWscsi	$720
Intel PD440FX /with Sound	**$310/350**
Tyan Dual P5 /512k AT	$330
Tyan Dual P6 AT / ATX	$385/430
Asus TX97 512k AT/ATX	**$220/240**
Asus HX 512 MMX AT/ ATX	$188/195
GA 430TX 512 MMX AT	$175
VX 512k MMX AT	**$85**
Shuttle 555A VX512k,k5,k6,M2	**$130**
Shuttle 575A TX512k,75-233,	**$150**
430TX 512k MMX AT	**$140**

HARD DRIVES

1.3/2.0/3.0G	$170/220/260
QuantumFB1.2/3.2/3.8	$230/285/345
Quantum **ST2.1/3.2G**	$245/298
Quantum **ST4.3/6.4G**	$375/470
WD1.2/2.1/2.5G	$233/250/270
WD3.1/4.0/4.3G	$295/375/395
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Quantum SCSI 2.1 3.2G	$340/380
Quantum ST-scsi 4.3/6.4	$530/690
Quantum4.5/9 G UWscsi	$1000/1830
Seagate Bar4.3/9 UWscsi	$1090/1780
Seagate Sheata 4.3GUWscsi	**$1160**

Creative-DVD kit

Panasonic PC DVD DDboard, Softwear etc	$595

MULTIMEDIA

[illegible]

16bit /32bit sound card	$30/50
SoundBlaster 16 / ide	**$60/65**
SoundBlaster 32 /**AWE64**	$95/110
AWE64 (retail)/Gold (4M)	$135/245

CD-ROM

12x /16x eide	$88/90
18x/20x /**24x** eide	$95/98/130
12x /16x scsi	$155/200

CD-WRITER

Panasonic 4x2x /ext/soft.	$540
HP 6020i/e/EP	$580/730/745
Yamaha 400 in/ex	$780/950
writable cd-disk	$5

Speakers

60W/80W/160W	$15/16/40
Yamaha M10/M15	$70/85
Yamaha Subwoofer MT10	$125
Altec 52/45/55/500	$99/120/210/390
Labtec 3210	$110
MicroPhone	$5

CD Titles (w/CD-ROMonly)

Encarta 97 home bundle	$75
Essential bundale	$125
Corel WP Suit 7 / Suit 8	$60/70
DVD disk w/ fashion songs	$10
10 CD with lots games	$35

CPU

Intel P5 133/150	$145/150
Intel P5 166/200	$210/295
Intel P5 MMX166/200/233	$220/350/590
Intel P6 180/200	**$520/690**
Intel *PentiumII 233/266*	$795/995
Intel Pentium *Pro 200/512k*	$850
AMD K5 75/90/100	$46/60/85
AMD K5 133/166	$90/120
AMD K6 MMX166 / 200	**$200/295**
AMD K6-MMX233	**$420**
IBM 6x86 166+/200+	$98/120
Cyrix 6xMX166/200/233	$195/295/415

VIDEO CARDS

CL 5446 1M / 2M /4M	$28/38/68
S3 Trio 64 1M /2M	$30/40
S3 Virge 3D 2M /4M	$53 /70
ATI 3D 2M / 4M	$70/110
ATI 3D PC2TV 2M/4M	$110/150
ATI ProTurbo PC2TV 4/8	$180/270
ATI all-inWonder 2/4M	$280/320
Millennium 2/4M(retail)	$180/240
Mystique220 2M/4M	$150/210
Millennium-II 4M/8M	$300/430
Monster 3D 4M oem/retail	$210/290
Stingray 128 with 6M	$320

SCANNERS

HP 5S / 5P / 4C	**$340/510/970**
Microtek E3/E6	**$290/650**
Microtek E6 Pro/ 3	$850/1690
Epson ES1200C/Pro	$930/1230
UMAX powerlook2000	$4630

ZIP / TAPES

HP T2000/ Dit (2G)	$205
HP T3000 / E (3.2G)	$255/310
HP T4000 / E (4 G)	$470/540
ZIP 100M Para/scsi int/ext	**$195**
Zip 100M drive ide int	**$170**
JAZ 1G scsi Int/ Ext	**$398/520**
SyJet1.5 scsi Int/ext/Para	**$433/599/500**
Zip disk / Jaz disk	**$17/110**
Traven TR1/TR3/TR4	$36/39/45
DTA scsi tape drive	www atic ca

CAMERA/CAPTURE

Miro DC30	$1300
CasioPC Camera	$530
Kodak DC50	$830
USR Video Fun kit	$299
QuickCam color	$330

All specifications / prices/quantities are subject to change without notice.

IOmega /USR /Monitors /Printers /Notebooks are followed by Canadian authorized service centres

RAM

EDO/Reg

72pin **4 / 8 / 16M**	$26/44/75
72pin 32 / 64M	**$145**/325
Parity 72pin 4 / 8 /16M	$38/65/90
Parity 72pin 32 / 64M	$180/580
30pin 1M / 4M	$9 /25
DIMM 16 / 32M	$90/155
DIMM 64 / 128M	$360/1050
SDRAM (10ns) 16/32M	**$95/175**
ECC DIMM 32 / 64M	$200 /630
ECC DIMM 128M	$1200
SDRAM-ECC(10ns)16/32M	$130/250
MAC DIMM 16M/32M	$98/195
SO DIMM 8/16/32M	$90/150/220
SOJ Video RAM 1M	$10
RAMs for Notebooks	available

MONITORS

SVGA 14"/15"/17"	$215/295/540
Acer 15"/17"(76ie/78in)	$350/600/660
MAG **DX15T /D700T**	**$450/840**
NEC C500/A500/M500	**$445/500/515**
NEC XV15+/XV17+	**$530/880**
NEC M700/P750	$990/1155
Sony 100SX/SF	**$490/570**
Sony 200SX/SF	**$890/980**
Sony 17SE2T/20SE2T	**$1150/2100**
Samsung 15Gle/Gli	$430/460
Samsung 17 Gli/700P	$780/880
ViewSonic15GS/17GS(G771)	**$440/728**
Viewsonic 17PS/PT770	**$900/990**
Viewsonic P810/815	**$1900/2080**
Optiquest V665/V775	$630/750
Mitsubishi**17TX/21TX**	**$1020/2050**

PRINTERS

OKIDATA.. .. 6e
Panasonic .. 24pin

HP DJ 400C/692C/694C	$240/365/385
HP DJ 820cxi/870c	$420/510
HP 6L / 6P /6MP	$510/950/1200
HP 5 /5N /5M	$1400/1990/2390
HP 5M Color w/32M	$8990
HP 4V /5Si	$2480/3490
Accessary for HP	in stock

Canon

Canon BJC240/4100	$225/270
Canon BJC4200/4550	$290/540

Brother

Brother HL730DX/760DX	$420/550
Brother HL1260	$1100

Epson

Stylus 400 (720dpi)	$300
Stylus 600/800 (1440dpi)	$380/520
PhotoStylus 700	$www atic ca

Lexmark

Inkjet 2050	$320
Optra N 4/16M	$3850/4880
Optra Lx N+/Net	$3250/3550

Notebooks

NetBook (Special)

NP150DT P150/16M/2.1G/12.1" TFT/10x	$2980
NP166DTF P166/16M/2.1G/12.1"TFT/10x/33.6	$3600
NM166DTF MMX/32M/2.1G/12.1"TFT/10x/33.6	$3680
NM200DTF MMX/32M/2.1G/12.1"TFT/10x/33.6	$3890

Toshiba

200CDS • P100/16M/810MB/11.3" DSTN	$2150
220CDS P133/16M/1.3G/10x/12.1" DSN (new)	$2880
300CT • P133MMX/32M/1.5G/10.4" TFT/10x	$4150
440CDS • P133MMX/16M/1.3G/12.1" DSN/10x	$3340
460CDT • P166MMX/32M/2.1G/12.1" TFT/10x	$5320
510CDT • P133/16M/2.1G/12.1" TFT/10x	$4850
530CDT • P166MMX/32M/2.1G/12.1" TFT/10x	$6380
660CDT P150/16M/1.4G/12.1" TFT/10x	$5660
740CDT • P166MMX/16M/3G/13.3" TFT /10x/28	$7260

NEC

6050MH • P150MMX/16M/1.4G/10x TFT	$5650
6050MX • P150MMX/16M/2.1G/10x/12.1" TFT	$6850
6200MX • P166MMX/32M/2.1G/10x/12.1" TFT	$7850

IBM ThinkPad

TP380 • P150/16M/1G/12.1" DSTN/	$2990
TP380D- P150/16M/1.35G/12.1"DSN/ 6x	$3350
560 • P133/8M/2.1G/12.1"TFT	$2980
760E • P150/16M/2.1G/12.1" TFT	$5850
760XL • P166MMX/16M/2.1G/12.1"TFT/W95	$8550
760XD • P166MMX/32M/3G/12.1"TFT/8x	$8450

HITACHI

MX133T• P133/16M/1.4G/12.1"/8x/33.6/TFT	$3490
MX150T• P150/16M/2.1G/12.1"/8x/33.6/TFT	$4430
MX166T• P166MMX/16M/2.1G/12.1"/8x/33.6/TFT	$4650

Daewoo

P133-16M 1.4G/ 6x / 12.1" TFT	$3100

HP / AST / AppleBook
SCEPTRE / GVC / FIC

Notebook Accessories

• **Notebook Memory**

8MB +$100.00	16MB +$150.00

• **Modems and EtherNet**

Motorola 33.6 modem PCMCIA	**$200**
Motorola 33.6 FM and Cellula cable	**$370**
Megahertz XJ3336T 33.6kFM/10BT	**$480**
Megahertz XJ4336 33.6k FM	**$285**
33.6 Pcmcia faxmodem	$150
PCMCIA 10BT Ethernet	$140
Xircom 10BT PCMCIA	$200
3Com 3C589C-TP PCMCIA	$180
3Com 3C562D-TP w/33.6 modem	$400

• **Batteries, Sound Cards, Backup**
[illegible]

CASE / KB / MOUSE / SCSI

SCSI 1520 /1522	$90/96
PCI SCSI 1535/2920	$145/165
PCI SCSI 2940 /2940UW	$235/280
PCI 3985 2-channel scsi	$800
Scsi cable/ Wide scsi cable	$10/20
Rock mounting IDE/SCSI	$30/35
Printer cables.6ft /10ft	$5/10
Modem cables	$13
Laplink cables	$30
Mouse/Logitech 2B	$8/15
Logitech 3B /MS V2 1A	$32
AT13/15/19/23"case	$40/45/65/120
ATX 17"/23"	$95/120
104KB/Fujitsu8725/4725	$18/26/60
MS Natural /TouchPad KB	$70/65

Hunting for the well-loved PC

...or how to buy a used computer

EVANS

Psst! Wanna buy a nice clean nearly new computer? Only used by a little old lady on Sundays for typing up church hymn lists! Like new! Only $500!

Hmmmm. Well searching for a good cheap computer isn't exactly like buying a used car, but there are some similarities nonetheless

In exchange for getting a really really good price, you hope that you're also getting a computer that is going to last a couple of years and do what you need it to do. Unfortunately the used PC equation is a bit more complicated than the used car scenario, because while five-year-old car technology really isn't all that different from current models, in computing, even a few years makes a radical difference in what a computer is capable of doing

Where do you want to go today (with yesterday's technology)?

A brand new personal computer will, by definition run current operating systems (Windows 95 or Mac OS/8) whereas a used computer may only be able to run a considerably older operating system, and similarly ancient business applications, games and utility programs So, the first question to ask is, what do you really need a computer for?

In most cases, writing is the basic use for a home or small office computer This is good news, because almost anything, from an Apple II or a Commodore 64 to an Amiga, or an 8088-based IBM XT can run some kind of word processor print out files, and send them to other computers via a modem and a terminal program

The second, increasingly important usage is to connect to the Internet to send email and perhaps surf the Web For this you'll need a somewhat more modern computer (though even an Amiga 500 a Mac II or a 386 PC running Windows can do Web browsing, with the proper software and sufficient RAM)

Realistically though since most people looking for a first PC on a stringent budget are also relative computer novices you should stay away from computer antiques unless you know for sure that the system you're looking at is in perfect and complete working condition If you buy a really old computer (more than five or six years old), you will have to be quite ingenious and persistent to find parts, software and advice to keep it in operation if anything goes wrong with it If you want to add any new software or hook it up to a new peripheral device like a better printer monitor, or modem, you may be out of luck.

So, my advice to you is to start looking at used computers that are no more than one or two "generations" removed from the most current models on the market. Examples would be a 486 or slow Pentium PC running Windows 3.11 (such models would even be capable of running Windows 95 with the proper amount of RAM), or a color Mac with a 68040 or early PowerPC chip, running Mac OS/6 or 7 These will still be quite inexpensive (well under $1,000 including a 14-inch monitor, software and a printer), and will be close enough to being current to be able to exchange files with state-of-the-art computer users. So let's get down to brass tacks

How much buck for the bang?

If your budget is over $1 000 you should really look at buying one of the cheapest available new computers that are publicly advertised in the local press, simply to get the protection of a warranty

Continued on page 54

Comet Computer
5986 East Boulevard at 44th, Vancouver
Computers Internet Network Repairs Printers
Back to School List ✓
1. Computer System
Pentium* 166 PC
Quality PCI Motherboard
Intel Triton chipset
16MB 72 pin RAM
Minitower Case & 200W CSA power supply
16X CD-ROM 16-bit sound 60W speakers
USR 33 6 voice/fax/modem (upg to 56K)
PCI 2MB DRAM video adaptor
3 5" 1 44MB Floppy
Logitech Serial Mouse
Quality 104 enh keyboard ✓
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15" Digital Colour Monitor ✓
3. Colour Printer
Canon BJC240 Colour Printer
$1999
System only (no monitor or printer) - $1499 or
Upgrade to Pentium233MMX $500 or to Pentium II 233- $900
*Pentium is a registered trademark of Intel
With system or hard drive.
Corel Perfect Office 8 $149 or MSEncarta 97/Works/Money/Golf/Magic School Bus $99
Prices reflect 3% cash discount, all prices subject to change without notice
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13.3" XGA TFT
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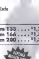
WITH EVERY SYSTEM PURCHASED GET MICROSOFT HOME BUNDLE FOR $50 (VALUE $95) OR $25 OFF A PRINTER OF YOUR CHOICE

STARTER PACK

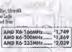


- Intel Pentium Processor
- 430VX PCI Motherboard w/512K Pipeline Cache
- 16MB EDO RAM
- 2.1GB EIDE Hard Drive
- 3.5" Diskette Drive
- S3 3d Virge Video w/2MB
- 15" SVGA Monitor
- 12x EIDE CD ROM
- 16-bit Audio & Speakers
- 33.6 Internal Fax/Modem
- Mid Tower Case 230 W Power Supply
- 104 Keyboard & Ergonomic Mouse
- 2 Year Parts/Labor Warranty

Pentium 133 .... $1,299
Pentium 166 .... $1,339
Pentium 200 .... $1,379

REPLACE MODEM WITH NETWORK CARD AT NO CHARGE!

PRO PACK



- AMD K6 MMX Processor
- Asus TX97 E Board 430TX PCISet, Ultra-ATA
- 32MB EDO RAM, 512K Pipeline Cache
- 2.1GB Ultra-ATA (33MB/s) Hard Drive
- 3.5" Diskette Drive
- Diamond Stealth 3D Video with 4MB EDO RAM
- 15" SVGA Monitor
- 16x EIDE CD ROM
- SoundBlaster AWE 64 Audio & 180W Speakers
- 33.6 Internal Fax / Modem
- Mid-Tower Case, 230W Power Supply
- 104 Keyboard & Ergonomic Mouse
- 2 Year Parts / Labour Warranty

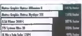
AMD K6-166MHz $1,749
AMD K6-200MHz $1,869
AMD K6-233MHz $2,039

AMD

FEATURED PRODUCT

MYSTIQUE 220 BUSINESS

Millennium II



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4MB WRAM ... $450

PC Computing ★★★★

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matrox

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- 3.5" Diskette Drive
- **Matrox Mystique 220**, 2MB SGRAM/Software
- 17" SVGA Monitor
- **24x EIDE CD-ROM**
- **Soundblaster AWE-64 Audio**
- **Yamaha YST-M15 Speakers**
- **56K Internal Fax/Modem**
- Mid-Tower Case 230W Power Supply
- 104 Keyboard & Ergonomic Mouse
- 2 Year Parts/Labour Warranty

Pentium MMX-166 **$2,399** Pentium MMX-200 **$2,579**
Pentium MMX-233 **$2,799**

PENTIUM II SUPERSTATION

MMX intel inside pentium®II

- Intel Pentium II Processor
- Asus KN97 X Board 440FX PCISet
- 32MB EDO RAM, 512K Cache
- Western Digital 2.5GB EIDE Hard Drive
- 3.5" Diskette Drive
- Diamond Stealth 3D Video w/4MB EDO RAM
- 24x EIDE CD-ROM
- Soundblaster 16 Sound Card & Speakers
- ATX Mid Tower Case, 230W Power Supply
- 104 Keyboard & Ergonomic Mouse
- 2 Year Parts/Labour Warranty

PENTIUM II – 233MHz $2,179
PENTIUM II – 266MHz $2,429
Monitor not Included

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ThinkPad 380
AVAILABLE NOW!

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Intel P 150MHz
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1.35GB HDD

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SAT. PRO 440CDT
Intel P 133 w/MMX
16MB EDO RAM
12.1" TFT Display
1.35GB HDD
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NOTEBOOK ACCESSORIES

3Com 3C589D TP PC Card Ethernet	**$185**
Megahertz XJ-1336 XJack 33.6 Fax/Modem	**$295**
Megahertz XJ-4336 XJack 33.6 Fax/Modem Cellular Ready	**$325**
Megahertz XJ-4336M XJack 33.6 Fax/Modem w/Motorola Attach	**$355**
Megahertz XJ-3336T XJack 33.6 Fax/Modem & 10BT	**$435**
Targus Notepac Nylon Carrying Case	**$60**
Targus Notepac Plus Nylon Carrying Case	**$85**
Targus Premier Leather Carrying Case	**$140**

MONITORS

Acuma 14" Monitor Analog Controls	$[illegible]
Acuma 15" Monitor Digital Controls	$[illegible]
Acuma 17" Monitor (0.28) OSD Ctrl.	$609
Mag Innovision DX 15T 15" Monitor (0.25)	$499
Mag Innovision DX 700T 17" Monitor (0.25)	$809
NEC XV15+ 15" Monitor w/CromaClear	$535
Hot Price! NEC XV17+ 17" w/CromaClear	$950
NEC P 1150 21" Monitor	$[illegible]
Optiquest V773/V775 17" Monitor	$750 $[illegible]
Sony Multiscan 100sx 15" Trinitron	$[illegible]
Sony Multiscan 200sx/200sf 17" Trinitron	$949 $1,099
NEW! Viewsonic G771 17" Monitor (0.27 DP)	$790
New! Viewsonic PT 770/775 17" Monitor (0.25DP)	$999 / $1,099
Viewsonic G800 / P870 21" Monitor	$1,499 / $1,[illegible]

VIDEO CARDS

S3 3D Virge w/2MB EDO RAM	$[illegible]
ATI Video Boost 2MB SGRAM	$85
ATI 3D Xpression+ 2/4 MB SGRAM	$98 / $127
ATI 3D Pro Turbo PC2TV 4/8 MB SGRAM	$190 / $25[illegible]
ATI All in Wonder 2/4 MB EDO RAM	$310 / $340
Diamond Stealth 3D 2/4 MB EDO RAM	$77 / $118
Diamond Monster 3D w/Games	$270
Matrox Mystique 220 2/4 MB SGRAM (Bus.)	$175 / $230
Matrox Millennium II 4/8 MB WRAM (Bus.)	$340 / $450

MULTIMEDIA

12x EIDE CD-ROM	$[illegible]
16x EIDE CD ROM	$[illegible]
Panasonic 24x EIDE CD-ROM	$130
Ensoniq 1868 16-bit Sound Card	$[illegible]
SoundBlaster AWE-64 Value Sound Card	$129
SoundBlaster AWE-64 Gold Sound Card	$365
Creative Labs PC DVD Multimedia Kit	$649
Yamaha YST M7 Powered Speakers	$60
Yamaha YST-M15 Powered Speakers	$85
NEW Yamaha YST-M25 Powered Speakers w/Subwoofer	$12[illegible]

MODEMS

Supra 33.6 Int. Fax/Modem w/Voice	$[illegible]
Supra 33.6 ASVD Ext. Fax/Modem	$159
Supra K56 Int. Fax/Modem w/Voice	$[illegible]
Supra NetCommander ISDN Adaptor	$289
USR Sportster 33.6 Int. Fax/Modem	$115
USR Sportster Voice 33.6 Int. Fax/Modem	$130
USR Sportster Voice 33.6 Ext. Fax/Modem	$245
USR Sportster Voice 56K Int. Fax/Modem	$235
USR Sportster Voice 56K Ext. Fax/Modem	$290

PRINTERS

Brother HL-730 Laser Printer	$520
Brother HL-760 Laser Printer	$599
Canon BJC 240 Printer	$210
Canon BJC-4200/4550 Printer	$310 / $599
Canon LBP 460 Laser Printer	$320
Epson Stylus 400/600 Printer	$290 / $410
Epson Stylus 800 Printer	$599
HP Deskjet 670C/692C Printer	$300 / $405
HP DeskJet 870Cxi Printer	$550
HP LaserJet 6L Printer	$560
HP LaserJet 6P/6MP Printer	$1,030 / $1,290
HP LaserJet 5/5M Printer	$1,495 / $1,895

NETWORKING

3Com 3C509 ISA Combo	$155
3Com 3C900 PCI Combo	$165
3Com 3C905-TX PCI 100BT	$135
3Com 3C16700 TPO 8-Port Hub	$165
3Com 3C16701 TPC 8-Port Hub (Chain)	$210
[illegible] ISA Combo	$45
[illegible] PCI Combo	$[illegible]
RJ-45 Cat. 5 Cable. 10/25 Ft	$9 / $17
RJ-45 Cat. 5 Cable. 50/100 Ft	$27 / $40
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- 13" Mini-tower case 230W
- 104 Win95 Keyboard & 2B Mouse
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- 16bit Full Duplex 3D Sound Card
- 80W Multimedia Speakers
- 33.6K Modem w/ SpeakerPhone
- 2 Year Parts and Labour Warranty

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System 2 (PCI) INTEL PENTIUM MMX
MMX166 **$1330**
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- 15" Monitor N.I L.R, Digital Control 1280x1024 .28 dp PnP
- 15" Mid-tower case 230W
- Logitech 3B MouseMan
- 104 Windows 95 Keyboard
- 20X EIDE CD-ROM Drive
- SoundBlaster 16 PnP (*Creative Lab*)
- 80W Multimedia Speakers
- 2 Year Parts and Labour Warranty

System 3 (PCI) INTEL PENTIUM MMX
MMX200 **$1828**
Lease $59 /Month
- 32MB 10ns SDRAM 512K, Triton TX
- 2.5GB EIDE hard drive Mode 4
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- Matrox MGA Mystique II 3D 4MB SGRAM exp 8M *Full Screen MPEG*
- 15" Monitor N.I L.R. Digital Control 1280x1024 .28 dp, PnP
- 17" Mid-Tower case 230W CSA
- Microsoft 2B Mouse
- 104 Windows 95 Keyboard
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Options

P-133	$1055	P150	$1080
P-166	$1080	MMX	$1133
P-200	$1228	MMX	$1259
CYRIX 6X86-166/200			$999 /$1009
AMD MMX K6-166/200			$1125/$1210

P-133	$1252	P150	$1270
P 166	$1288	MMX	$1330
P-200	$1398	MMX	$1455
P-233		MMX	$1668
PRO-180/200			$1680/$1639
PII 233/266			$2122/$2332
CYRIX 6X86-166/200			$1206/$1228
AMD MMX K6-166/200			$1325/$1410

P-133	$1620	P150	$1648
P 166	$1660	MMX	$1700
P-200	$1788	MMX	$1828
P-233		MMX	$2025
PRO-180/200			$2028/$2246
PII 233/266			$2790/$2700
CYRIX 6X86-166/200			$1500/$1500
AMD MMX K6-166/200			$1698/$1788

Win95 Full $125 NT Workstation 4.0 $258 MS Home (6 titles) $85 MS Nature Kit $88 MS Office Pro 97 $429
U S R Sportster 33.6 Voice Modem Int. V 34 Upg 56K w/ 1 Month Internet Access, $129

September' 97 *Specials!*
Lexmark Jetprinter 1000 600x600DPI Color $206
HP 6020i CDR Drive w/ software $478
CLR 24BIT Scanner $228
Video Phone Kit $238
U.S.R. Sportster Int. Voice Modem $129 33.6K / $219 56K
IOMEGA Jaz 1GB Disk $118
64bit PCI Video Capture Card w/TV Tuner $90
EDO 8/16/32MB $45/75/148
CDR 74 Min. $6.99

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RAM (Call 451-8682 for Best price)
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CPU (Call 451-8682 for Best price)
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EIDE HARD DRIVES
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Quantum
Seagate
Maxtor
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SCSI WIDE HARD DRIVES
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Canon EPSON HEWLETT PACKARD BROTHER
[illegible]

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YAMAHA CREATIVE
[illegible]

NETWORKS
[illegible]

CONTROLLERS
[illegible]

KEYBOARD MICE & CASE
[illegible]

SOFTWARE
[illegible]

Tape Drive & Removable Storage
zip
[illegible]

MODEM
Acer SupraExpress US Robotics
[illegible]

VIDEO CARD
ATI DIAMOND MGA
[illegible]

MONITOR
SONY NEC
[illegible]

OCLI Glare/Guard Screen Filter
[illegible]

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The well-loved PC

Continued from page **52**

If you have only $300 to $800, then you should look for a used computer package that includes:

- a PC or Mac with 256 color graphics display at VGA resolution (or Mac equivalent), at least a 486 (PC) or 68040 (Mac) processor or better, 8 MB of RAM, a 16-bit sound card, and at least a 340 MB hard drive, mouse and keyboard, and all necessary cables. If it has a CD-ROM drive built in, this is a bonus.
- a 13-inch or 14-inch color monitor.
- at least a 9600 bps modem
- some kind of printer (probably black and white, but sometimes it may be a color dot matrix printer)

The computer should have legal versions of the operating system, business applications software, an anti-virus program and any games (with original program diskettes, and manuals, etc.)

This "base" used PC will let you write letters, essays, résumés, novels or screenplays, as well as use tax and accounting software. (And since this was a mainstream computer just a few years ago, the available software can be

Continued on page **67**

B.C. used PC directory

B&C Computers, 6916 Russell Ave., Burnaby Tel. 437-6919. Specialty: PCs, some Macs.
Benchmark Computers, 2627 Kingsway, Vancouver. Tel. 451-6333
Specialty: PCs and some Mac accessories
Computer Clearance Warehouse, 3083 Grandview Highway, Vancouver. Tel: 437-5551
Specialty: PCs and Macs
Computer Lovers Centre, Unit #2-555 Clarke Rd. Coquitlam. Tel. 931-0308
Specialty: PCs, some Mac parts
Computers II Computers, 3474 W. Broadway, Vancouver. Tel. 733-5383. Specialty: PCs, Macs
Essaro Computers, 119 Lonsdale Ave, North Vancouver. Tel. 990-0547. Specialty: PCs, Macs
Games Lovers Library, 140-8020 Capstan Way Richmond. Tel. 270-7888
Specialty: PCs, some Mac parts
Golden Top Computer, 10200-128th St., Surrey Tel: 581-4698. Specialty: PCs, some Macs.
J & B Consignment Warehouse, 1916 W. 4th Ave., Vancouver. Tel. 733-0188. Specialty: PCs, Macs
Jeono Audio/Video Ltd., 1232 W. Broadway Vancouver. Tel: 733-4409. Specialty: PCs
New Wall Computers, 8-2900 Smith St. Richmond. Tel. 276-2508. Specialty: Macs, PCs
PC Galaxy Consignment Ltd., 2744 W. 4th Ave., Vancouver. Tel. 732-7816. Specialty: PCs, Macs
105-5780 Cambie Rd., Richmond. Tel.303-7331
Specialty: PCs, Macs
PC People Sales and Service, 3399 Kingsway Vancouver. Tel. 436-2588. Specialty: PCs
PC Spectrum, 230-2182 W. 12th., Vancouver. Tel. 879-7815. Specialty: PCs.
PGL Electronics, 6852 Granville St., Vancouver. Tel. 266-8806. Specialty: PCs.
Polcoma, 458 W. Broadway, Vancouver. Tel. 879-0631. Specialty: PCs
P.C. Plus, Unit #5-8145-130th St., Surrey. Tel. 572-8324. Specialty: PCs, Macs
Rena's Buy & Sell Network, 5684 Dorset, Burnaby. Tel. 678-1181 or 434-8500.
Reality Computer Brokers, 307-130 E 15th Ave. Vancouver. Tel. 872-4911
UBC Surplus Equipment Recycling Facility (SERF), 2352 Health Science Mall, Vancouver. Tel. 822-2813. Specialty: All types
Vassar Computer Sales, (based in Mississauga) Tel: 514-983-0083.

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16MB EDO RAM (up to 128MB)
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16 bit Sound Card
60 Watts Stereo Speakers
Panasonic 1.44MB Floppy Drive
14" .28mm 1024x768 Monitor
CL 5446 1MB with MPEG
NMB 104-Keys Win95 Keyboard
16" Tower W/CSA P/S
33.6 Supra Int. Voice Fax Modem
Mitsumi 2-Button Mouse
Mouse Pad

C/W 16MB EDO RAM
8x CD-ROM Drive
14" Monitor
33.6 Voice Modem

P150	$1019
P166/200	$1038/1088
P166/200MMX	$1088/1258
Cyrix 166+/200+	$899/979
AMD K5-133	$959
AMD K5-166	$999
AMD K6-166	$1069
AMD K6-200	$1189

Super Deal

Upgrades:
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Acer AP53 Mainboard
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Triton II 430HX Chipset
2x UART16550
16MB EDO RAM (up to 512MB)
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8x Panasonic CD-ROM Drive
Sound Blaster 16
120 WMA Stereo Speakers
1.44MB Panasonic Floppy Drive
15" .28mm 1280x1024 Monitor
33.6 Supra Int. Voice Fax Modem
S3 Virge 3D 2MB w/MPEG
NMB 104-Keys Win95 Keyboard
16" Tower Case w/ CSA P/S
Logitech 3-Button MouseMan
Mouse Pad

C/W 16MB EDO RAM
8x CD-ROM Drive
15" monitor
33.6 Voice Modem

P-133	$1339
P-166/200	$1388/1389
P-166/200 MMX	$1525/1569
Cyrix 166+/200+	$1279/1309
AMD K5-133/166	$1299/1319
AMD K6-166MMX	$1399
AMD K6-200MMX	$1469

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2x UART 16550
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2.1GB Quantum ST Hard Drive
16X Toshiba CD-ROM Drive
Sound Blaster 32
KOSS Dual Amp. Stereo Speakers
1.44MB Panasonic Floppy Drive
15" .28mm 1280x1024 Monitor
ATI 3D Xpn+ 2MB w/MPEG
Fujitsu Win95 Keyboard
18" Tower w/ CSA P/S
33.6 Supra Int. Voice Fax Modem
Microsoft 2-Button Mouse
Mouse Pad

C/W 32MB EDO RAM
16x CD-ROM 15" monitor
33.6 Voice Modem
Quantum ST 2.1 GB

P-133/166	$1599/1599
P-166	$1659
P-166MMX	$1719
P-200MMX	$1879
P-233MMX	$2099
P II 233/266	$2438/2848

Upgrades.
64MB EDO RAM +$140
3.2GB Quantum ST HD+$40
17" Monitor +$300
ATX Mainboard plus Tower +$45

512K Pipelined Burst Cache
Triton 430 TX Chipset
2x UART 16550
16MB SDRAM 168pin
1.2GB Quantum Hard Drive
16X Toshiba CD-ROM Drive
Sound Blaster AWE 64
120 Watts Stereo Speakers
1.44MB Panasonic Floppy Drive
15" .28mm 1280x1024 Monitor
S3 Virge 3D 2MB with MPEG
NMB 104-Keys Win95 Keyboard
18" Tower W/CSA P/S
33.6 Supra Int. Voice Fax Modem
Logitech 3-Button MouseMan
Mouse Pad

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P-200MMX	$1619
AMD K6-166MMX	$1439
AMD K6-200MMX	$1539

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ATI 3D Xpression+ 2MB w/MPEG
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Microsoft 2-Button Mouse
Mouse Pad

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$2219

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33.6 Voice Modem
Quantum ST 3.2 GB

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4.3GB Quantum Fireball ST Hard Drive +$100
24X Panasonic CD-ROM Drive +$35
ATX Mainboard plus tower +$85
17" Monitor +$189

Back to School Specials *Limited Quantity*

Quantum 1.0GB Hard Drive $189 HP 870 CXI Deskjet Printer $[illegible] Sound Blaster AWE 64 (Retail) $129
Quantum Fireball ST 2.1GB Hard Drive $245 Intel Netport Express XL Print Server $[illegible]
Quantum Fireball ST 3.2GB Hard Drive $305 8x Panasonic/ 12x Toshiba CD-ROM Drive $[illegible]

SONY TOSHIBA Canon ViewSonic® HEWLETT PACKARD

CPU

Intel Pentium® 133/150MHz	$150/180
Intel Pentium® 166/200MHz	$180/210
Intel Pentium® 166/200/233MHz MMX	$275/385/500
Intel Pentium® Pro 180/200MHz	$380/720
Intel Pentium® II 233MHz, 512K	$790
Intel Pentium® II 266/300MHz, 512K	$1085/Call
Cyrix 166+/200+	$105/125
Cyrix 166/200/233 MII	call/ call/ call
AMD K6-166/200/233 MX	$218/310/450
AMD K5-75/90/100/133 166	$50/70/100/120/150

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Intel Pentium® II PD440FX	$345
Intel Pentium® Pro VENUS (440FX)ATX	$300
Acer P6NFS Pentium® Pro (440FX)/ATX	$305/315
Asus T2P4 512K Burst (430 HX)/ATX	$180/188
Acer TX 97/TX 97E 512K Burst (430 TX)	$115/220
Acer Pentium® II AX6F	$300
Acer Pentium® Pro AP65/ATX	$255/259
Acer AP53 512K Burst (430 HX)	$156
Acer AP5T 512K Burst (430TX) /ATX	$175/180

HARD DRIVES

WD 1.6GB/2.1GB/2.5GB	$236/280/300
WD 3.1GB/4.0GB	$310/30X
Quantum Fireball 1.0GB	$189
Quantum Fireball ST Ultra DMA 1.6GB/2.1GB	$230/245
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Iomega Ditto 3.2GB 3200 Int./Ext.	$275/300
Seagate SCSI DAT Drive 4GB Int./Ext.	$790/950
Seagate SCSI DAT Drive 8GB Int./Ext.	$1000/1230

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SDIMM 168pin 16/32/64MB	$100/180/400
ECC EDO DIMM 168pin 32/64MB	$276/530

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Adaptec 2940U Single/Kit	$278/300
Adaptec 2940UW Single/Kit	$338/300
Asus AS8C200 controller	$115

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12x Panasonic/Toshiba	$110/116
16x Toshiba/NEC	$105/125
24x Panasonic	$180
SCSI 12x Toshiba	$177
Sound Blaster 16PnP/32PnP	$65/116
Sound Blaster AWE 64 PnP(Retail)	$189

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Acma 14"/15"/17"	$215/325/610
Acer 14"/15"-54e/15"-56e	$249/340/380
Acer 17" 76e/17" 78e	$630/800
MAG DX15T/DX700T	$470/870
MAG DJ530/DJ700/DJ707	$420/785/850
Viewsonic 15GS/G771/17PS	$475/790/920
Viewsonic Optiquest G71/V775	$600/810
Sony 100sx/100sl	$515/575
Sony 200sx/200sf	$895/1060

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Iomega ZIP Disk 100MB	$00
Iomega Jazz Drive 1GB SCSI Int./Ext	$389/535
Iomega Jazz Disk single/3-pcs pak	$135/378

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HP 5S/5P/4C Scanner	$336/521/1022
Canon BJC 240/4100 BubbleJet	$216/200
Canon 4200/4650 BubbleJet	$311/580
Intel Netport Express XL Print Server	$500
Epson Stylus 8400/800/800	$278/300/500
Epson Stylus II Pro XL	$1950
HP 670/692	$275/365
HP 820cxi/870C Inkjet	$368/550
HP 6L/6P/6MP Laser	$623/989/1247
HP 5SN	$1414/1799
Lexmark 2000/2050/7000	$249/275/486
Connectix Quick Cam (B/W)/(Colour)	$145/301

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USR 33.6 Fax/Modem Int./Ext.	$470/215
USR 33.6 Fax/Voice/Modem Int./Ext.	$125/236
USR 56K Fax/Modem Int./Ext.	$199/272
USR 56K Fax/Voice/Modem Int./Ext.	$195/209
Supra Express 33.6 Fax/Voice/Modem Int.	$90

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ATI 3D PC2 TV 2MB/4MB SDRAM	$149/189
ATI 3D Pro Turbo 4MB/8MB SGRAM	$179/238
ATI TV Tuner	$136
Diamond 3D 2MB/4MB EDO RAM	$129/130
MGA Millenium WRAM (retail) 2/ 4MB	$187/287
MGA Mystique SGRAM (retail) 2MB	$188
MGA Mystique220 Business SGRAM (retail) 4MB	$227
S3 Trio 64 V+ 1MB	$40
S3 Virge 3D EDO RAM 2MB/4MB	$60/70
Cirrus Logic 5446 MPEG 1MB	$35

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PCI Mainboard 512K Burst with:

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Hard Drives 101

BY
STEVE
HALINDA

Suppose you see several systems advertised by a given vendor. Other than the various brands of hard drives inside the machines, the differences appear to be very subtle You might be tempted to go with the configuration that costs the least.

If you use this strategy to save a few dollars, you will be overlooking a part of your system that can literally determine if the computer's performance will be sluggish, merely average or outright excellent.

You will be tempted to spend more money on the system for a few megabytes of RAM or a slightly better video card or perhaps a newer faster processor. But if you're like most people you will base your hard drive decision on its capacity

In May of this year our Test Lab explored the new era in hard drive technology We tested the latest drives from all of the major manufacturers. The units ranged in capacity from 3 2 GB to the monster trucks of the hard drive world the ones reaching 6 4 GB

But as we expected there were significant differences in the performance of the various drives For example when comparing two drives with capacities of 6.4 GB we found that other than their identical storage capacities, these two drives had very little in common. When we put them through the various tests, we saw a completely different set of results

So why the big performance difference?

The answer is quite simple actually You can tell a lot about how a drive will perform without even opening its packaging

By reading over the drive's specification sheet, you can find out all of the engineering specs that will spell out, at least to some degree how that drive will perform. And the good news is that you don t need to be an engineer to figure out what the numbers mean

The scope of this article is to inform the consumer about the world of hard drives by explaining in plain English what to look for on those data sheets, and what makes one particular drive better than another.

Drive speed. why so important?

Many will wonder why the performance of a hard drive will play such an important role in

Continued on page **59**

Home Office & Business Solutions

WingMan® Extreme Digital Joystick

Here's everything you need to take control of your favourite Windows® 95 and DOS air combat games Digital technology gives you a fast accurate deadly response An easy to use interface lets you customize your joystick. Its sleek, sculpted rubber grip raised rubber hat switch and sensitive trigger make game playing a joyous experience

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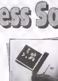

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- 32Mb EDO Memory 60ns
- Fireball-ST 2.1Gb Ultra/33 Eide
- ATI 3D ProTurbo PC2TV 4mb SGRam
- 17" SVGA 0.28mm NI L/R Monitor

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★ Upgrade To 32Mb SDRam 10ns Add $35

$1,990

NxTEC~SOHO Small Office Home Office

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Addition To Common Features
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- 1.7Gb Eide Hard Drive
- PCI Video Card w/1Mb Ram
- 14" SVGA 0.28mm NI L/R Monitor

★ Upgrade To Intel MMX 200Mhz Add $150
★ Upgrade To Intel MMX 233Mhz Add $235
★ Upgrade To 32Mb EDO Memory Add$75

$1,150

NxTEC~Power User

Intel Pentium 166MMX Processor

Addition To Common Features
- Intel 430TX PCIset Ultra/33 Eide
- 32Mb SDRam DIMM 10ns
- Fireball-ST 3.2Gb Ultra/33 Eide
- Matrox Mill PCI Video 4mb WRam
- 17" SVGA 0.28mm, NI L/R Monitor

★ Upgrade To Intel Pentium 200MMX Add $150
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Common Features: • Mid Tower Model • 512K Pipeline Burst Cache • 3.5" 1.44Mb Floppy Drive • Integrated Eide Controller • Integrated 2-Serial, 1-Parallel, 1-Usb Ports • Flash PnP Bios • 33.6bps Int Fax/Modem • 104-Key Win95 Keyboard • 16-Bit 3D Sound Card • 12X CD-Rom Eide Drive • Shielded Amp Speaker • 2 Year Parts & Labor Limited Warranty.

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16X CD-ROM Drive	Add$ 15
24X CD-ROM Drive	Add$ 55
Sound Blaster 16	Add$ 60
Sound Blaster 32 PnP	Add$ 60
Sound Blaster AWE-64	Add$ 85
Iomega ZIP Drive Int	Add$145
LS-120 a drive	Add$186
180Watts Speaker	Add$ 35
MS Nature Keyboard	Add$105
Genius Netmouse	Add$ 25
Logitec Mouseman	Add$ 25
Brother 730DX	Add$420
Brother 760DX	Add$520
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Canon 4100 Color	Add$245
Epson 600 Color	Add$600
HP 692 Color	Add$475
HP 6L Laser	Add$535
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Corel WordPerfect Suite	[illegible]

NxTEC-Pentium II

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- 32Mb EDO Ram 60ns
- Fujitsu 3.5" 1.44MB Floppy Drive
- Quantum Fireball-ST 3.2Gb Hard Drive
- ATI 3D ProTurbo PC2TV w/4Mb SGRam
- 24X Internal CD-Rom Drive
- Sound Blaster AWE-64 sound card
- 120 Watts Shielded Speaker
- 33.6bps Internal Fax/Voice/Data Modem
- Fujitsu 5725 Win95 Keyboard
- MicroSoft J2 serial Mouse
- 19" ATX Tower Case w/250w PS CSA
- 2 Year Parts & Labor Limited Warranty
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CD-ROM	N/A	N/A	N/A	Opt	10X	10X	10X	10X	10X/288	na	na	na	na	na	6X/336M	6X/336M
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(Effective From August 15, 1997)

Hard Drives 101

Continued from page 56

determining overall system performance. The reason is quite simple. Your CPU spends much of its time sitting around waiting for the hard drive to keep up.

Before the CPU can process any instructions, the data has to be delivered to it from some medium, whether a floppy disk, a CD-ROM or a hard drive. The CPU performs its internal operations in mere nanoseconds, while hard drives must cope with much slower times of milliseconds.

Although we humans may think of a millisecond as being an incredibly short period of time, to a CPU it's next to eternity. One millisecond (ms) is actually one million times slower than one nanosecond (ns). Comparing these two is like comparing a supersonic aircraft to a turtle.

Inside the CPU, all operations take place on a microscopic—and electronic—level. There are no large, bulky mechanical components that have to move around, which is the case with a hard drive's motors, platters and read/write heads. So, before you can play your favorite flight simulator, your hard drive has to deliver all of the necessary information into RAM, where it can then be processed by the CPU.

Incidentally, RAM also operates in nanoseconds, although still slower than the CPU. As long as hard drives will be made up of all those mechanical parts, they will never come even remotely close to matching the access times of RAM or the CPU.

Under the hood

There are several components that go into making a hard drive. These components must work together to give us that indispensable device we use daily to store an untold number of bits of digital information.

The terms mostly heard when talking about hard drives are platters and read/write heads. Disc-shaped platters made of aluminum or glass inside the hard drive are coated with a magnetic substrate that store the digital information. These platters cannot bend or flex, thus the term "hard" disk. Another term for hard drives is fixed disk, which comes from the fact that the platters are fixed firmly in place and cannot be removed.

The operation of a hard drive is quite similar to that of the good old floppy drive. The discs spin while the heads move back and forth over them to read and write data in tracks and sectors.

Every hard drive has multiple platters. The more platters a drive has, the larger its total capacity. Each platter has its own individual read/write head, but all of these heads move in unison across the discs at the same time since they're all connected to one central arm.

When the heads move back and forth across the discs, they don't actually touch the surface but rather float only a fraction of a millimeter above or below the platter on a very thin cushion of air. It's very crucial for drive manufacturers to ensure that this part of the drive is free from all dust particles, because even one tiny particle could come between the platter and the read/write head, thereby causing it to physically scratch the platter.

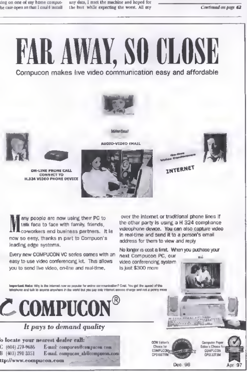
It's also important to note that when handling a drive, you must do everything possible to prevent any sudden vibration shocks from being applied to it. This holds especially true when the drive is under power. During operation, the platters spin at an average of 4 500 RPM (revolutions per minute) and a sudden shock during this time could very easily send the heads crashing into the platters, causing extensive damage, and very likely data loss and drive failure. This is known as a "head crash."

Believe me, I know! A short while ago while working on one of my home computers, I had the case open so that I could install a second drive for a short while. The case was leaning against my desk on the floor. The power had been turned on and just as I went to reach for the cover to close the case, I accidentally knocked over the tower. Since the case was leaning at a 45 degree angle against my desk, it only slid down a few inches, but it was enough to send the heads of the drive crashing into the platters.

In a desperate attempt to see if I had lost any data, I reset the machine and hoped for the best while expecting the worst. All my data was there, clearly visible, but was now in the middle of a new jungle of bad sectors, making it impossible to retrieve. Realizing the inevitable, I reformatted the drive to no avail. Every few seconds of disk access, there would be bad sectors showing up all over the place.

I then went into the BIOS to mark all of the bad sectors thinking I would end up losing a few MB of my entire drive and count my blessings. After turning the computer on, the

Continued on page 62



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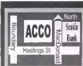

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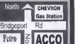

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Hard Drives 101

Continued from page 59

same thing happened again—more bad sectors, thus time in completely new areas of the drive. At this point, the drive was now unusable.

Although I didn t lose anything as far as data goes thanks to nightly tape backups, I did learn a valuable lesson on just how fragile hard drives can be Needless to say, special precautions should always be taken when handling these delicate and quite fragile devices.

SCSI or IDE?

Aside from the size of the drive and its various technical performance specifications you should also give some thought as to what type of interface you re planning on using You have basically two choices. IDE or SCSI.

It used to be that IDE drives were considered more value oriented because they had a slower spin rate and a much lower data transfer rate than SCSI Over the past couple of years, however, this has all changed. IDE drives are now designed to spin at 4,500 and 5,400 RPM, something that was unique to SCSI just a short while ago As a result, data transfer rates on IDE drives have literally gone through the roof when compared to old models.

Access times have also decreased, and it is now very common to have an average access time of under 11 ms With the new UIDE (Ultra IDE) variety of drives and controllers on the market internal data transfer rates up to 33.3 MB/sec (megabytes per second) are now possible Enhanced IDE (EIDE) drives are limited to 16 6 MB/sec.

The original SCSI interface can handle transfer rates of up to 5 MB/sec SCSI 2 then came along and raised the ante to 10 MB/sec. Shortly thereafter came Wide SCSI which pushed the limits even higher to 20 MB/s, and finally UW SCSI, which is capable of sustaining transfer rates internally of up to 40 MB/sec.

As we can see with the new Ultra IDE interface capable of transfer rates up to 33.3 MB/sec., it gives SCSI-2 and Wide SCSI a run for their money Only the latest breed of UW-SCSI can outperform the high transfer rates now achieved by UIDE, but the price difference between these two technologies is not even remotely close UW-SCSI drives still cost roughly triple that of the new breed of UIDE ones

When it comes to multitasking, SCSI wins hands down The major advantage SCSI has over IDE is its capability to perform true multiple data access In a multi-user environment such as a local area network (LAN) this can be a lifesaver.

When IDE drives have to deal with simultaneous access situations the controller has to tell the CPU to switch between the various tasks, thereby allocating CPU resources to the job of keeping track of what task has priority to the hard drive at any given time.

SCSI drives don't suffer from this problem. Their controllers have on-board processors that take care of all the work, and they can allow simultaneous data access for true multitasking Try reading from a floppy disk while writing to it at the same time on an IDE connection. One operation will have to completely finish before the other can start. The same test performed on a SCSI connection proves to be just another everyday task for the hardware The same holds true for hard drives although this test is easier to realize because of the much slower access times of floppy drives.

Performance issues aside one of the things that clearly distinguished one technology over another in the past was price. Although there is still a notable price difference between IDE and SCSI SCSI drives have come down a great deal in price over the past year or so For example, a typical 3 2 GB EIDE drive costs $360 today Its SCSI counterpart goes for $485 a difference of only $125

Of course, there is still a great difference when it comes to regular SCSI and Ultra Wide SCSI. For the majority of home users, IDE drives will more than do the job but if you're keen on SCSI, look towards getting a simple SCSI 2 version And of course there s the cost of the SCSI controller. These can range anywhere from $80 for a really basic one all the way up to $550 for the latest breed of UW models On the IDE platform, separate controllers are a thing of the past—nearly every motherboard manufactured after January of 1996 will have two IDE controllers built right onto the board With these two connectors acting as individual channels, you can run a total of four IDE devices at any given time. Not only is it cost-effective to have the controller right on the motherboard, but it's a great convenience as well.

Partitioning to save space

No matter how big a drive you buy you will want to partition it once you bring it home

Partitioning a drive is like creating a drive within a drive For example, if you partition your drive in two identical half sizes, you will have both a C. and D· drive. Data stored on one partition is completely isolated from the other. If one partition were to be reformatted, the data on the other one would be left perfectly intact.

Partitioning is crucial to saving precious hard drive space, or more accurately not wasting any unnecessarily No matter what file system your operating system uses it will waste a certain amount of your hard drive automatically The rule is that the larger your partition, the more space you are likely to waste This holds true for any operating system such as DOS Windows3 1, or Windows 95 OS/2 and Windows NT have addressed this problem, and don't suffer from the same limitations as the previously mentioned operating systems, although they aren't quite perfect either.

It's a good idea to keep your partition sizes equal to, or less than, 1 MB if you're running any of those three offending platforms. Due to the complexity of this and other topics in the world of hard drives, I'm going to leave the discussion here, and ask you to read our May '97 Test Lab on hard drives and their inner technology If you don't have a copy of that edition, you can find it online at http://tcp.ca

In conclusion ...

Deciding on a hard drive shouldn't be a painstaking challenge. By doing a little bit of research and comparative shopping you ll be able to make a decision in no time, and invest in a component that is much more than just a place to store file never to be used again ❑

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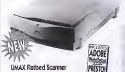

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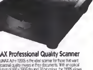

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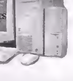

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Continued from page 54

as powerful as current versions. Just older and perhaps lacking some of the bells and whistles) It'll also allow you to do email and surf the Web. It won't run the most current 3D action games, but if the system comes with a CD-ROM drive, it will run most educational and children's "edutainment" titles. If your system is lacking these basic features, you may find it hard to use productively

A piece at a time

If you simply can't find a complete system at a really low price (say, $300), you may have to skimp on some parts, and add them at a later time For example, if you are simply doing word processing, in a pinch you may be able to use a monochrome monitor (available for almost nothing) with the text editor that comes with MS DOS

Later, you could add a cheap color monitor. Or, you could make do with a very primitive black and white dot matrix printer, and add an inexpensive color inkjet next year.

Where to get good silicon cheap

The first place you should look is your extended family Around 35 percent of Canadian households have at least one computer, but a large percentage of computer using households have several computers (buying new computers often becomes a disease—trust me on this) and often the older models are simply sitting around

Swallow your pride and remember, you're not begging, you're buying Hold your head up high and offer $50 and some tomatoes from your garden If you pay something even a token amount, for your cousin's used Mac Classic, then you have some guilt-equity to justify asking for help when something goes wrong

Alternatively, businesses frequently sell or give away older computers when they upgrade their systems Be first in line. On the other hand, schools, given their limited budgets usually work their computers until they are completely beaten into the ground, so that's rarely a good place to look.

By the way, if you are a computer novice, a Mac, any Mac, will usually be easier to get started on than an IBM-compatible Windows PC. However, over time, you may find that you need to exchange files and run compatible software with the Windows-using majority and the Mac may become a liability Flip a coin.

Used computer ads in the press, (including, ahem this fine publication) are an excellent place to look for used computers, but this can be a real gamble. You might get lucky and find a well maintained, complete system, or you might get suckered with a piece of junk. At a minimum, when you go to see a used computer bring a list of the things you need in your system (including hardware components, software, cables, manuals) and turn the computer on and make sure it works running the software you need and printing a file out.

For an incomplete system (say, without a printer) offer less money according to each component that isn't there, since you will have to go somewhere else and pay money to fill in the blanks Always be prepared to walk away—there are lots more great used computers out there. Also remember that some people have unrealistic expectations of the market value for their used equipment, asking more for a older model than what a new one costs in the store.

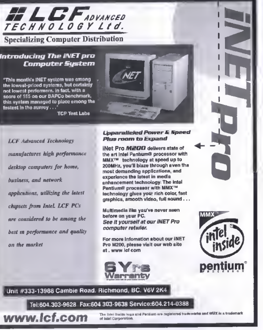
Preferably bring a computer-savvy friend with you to act as a BS detector. Never simply buy a box full of dusty computer parts out of a stranger's closet for over $10

The Middle Kingdom of used computer dealers

For the best bargains, if you have lots of free time hanging around lawn sales and swap meets, or meeting the trucks pulling in at the town dump probably can't be beat. If you have money to spend on a new PC you aren't still reading this article.

But, if you want an affordable used computer along with a certain measure of convenience and security, a happy medium is a used computer dealer. Typically, for around $1 000 you can get a complete three- or four-year-old system that has been tested, possibly refurbished and which comes with a short-term warranty (basic protection against a "dead-in-the-box" lemon) In return for not having to do a lot of legwork, you will pay a certain amount of money for the used computer dealer's time, overhead and profit margin

Whichever way you decide to go in the used computer game be prepared to invest some brain time doing your homework, and some shoe leather checking out different prospective computers If you are a little careful though, you could find an electronic helper that will be a valuable part of your life for years to come ❑



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Internet Explorer 4.0 vs. Communicator 4.01

BY GRAEME BENNETT

The next-generation browsers are here. Find out how they compare.

If you have ever surfed the Web chances are good you've used a browser from Netscape or Microsoft Now, both companies have updated and enhanced their products. But are the new features must-have additions or just more code bloat for functions you'll never need? In this article we'll look at the all-important usability factor of the new browsers and see how they compare and how they fare when compared against older releases

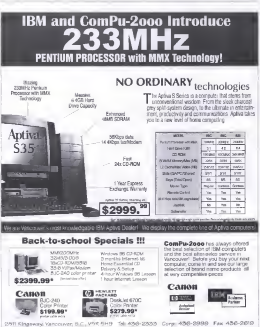
Microsoft Internet Explorer 4.0 PR2
For Windows 95/NT (Versions of IE4 for Mac and Windows 3.x are also available from www.microsoft.com/ie/)
Pros. Pages load faster than from within Communicator Java performance is up to 30 times faster than Netscape's—in other words, almost tolerable. Better interface better integrated with Windows and more customizable settings. Fully supports Microsoft IntelliMouse It's free
Cons FTP VRML and Web-authoring functions inferior to those of Netscape Minor bugs and occasional freezes. And hey who wants to see Microsoft win—again?

Internet Explorer 4.0 (IE4) has evolved considerably since the first Preview Release (PR1) Most notably PR2 is what is termed a "feature-complete" beta This means there are some bugs, but all features such as the Channels features and full-screen "kiosk" mode, are in place. IE4 ships with a large number of predefined channels ranging from news to movie previews Also new is "Microsoft Connection Manager," which is basically a reworked version of OSR2's dial-up status monitor.

The interface has been enhanced over previous versions, too Now, Web pages or applets on IE4's active desktop have a hidden menubar that shows up when the area is clicked. Buttons on IE4 are attractively shaded and overall performance is improved Gone are PR1's clumsy pie-chart views of the free space on your drives in the My Computer window Now an austere block of text shows the free space and shows a short description of control panels and other system documents Similarly, the program no longer wastes time with a splash screen on startup Web pages load without fanfare—and they load very very quickly

New on the toolbar is a Channels button which can automatically deliver "pushed" content We may be in the minority but we hate pushy behavior. Speaking of which.

Microsoft continues to aggressively push its vision of an integrated "all-Microsoft" environment Clicking the Edit button on the IE4 toolbar loaded Microsoft Word 97, despite the fact that we had Allaire's HomeSite Hot Dog Pro, Corel WordPerfect 8 and ▶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[illegible] Look ma, your Windows 95/NT desktop [illegible] full-screen view of any Web page you choose. (A [illegible] at the upper right corner of the screen brings it back.) [illegible] great way to view Web pages. You can also set this [illegible] much as the standard Windows 95/NT [illegible] be configured. Other new IE4 features, such as the [illegible] on the toolbar and the ability to hide any window with a [illegible] click on the corresponding application or document [illegible] can also help manage the clutter of [illegible] typical Windows [illegible] desktop.

several other text editors registered with the operating system, and had most recently been using HomeSite to edit HTML pages. To its credit, however, the company provides an automatic conversion of email messages and addresses from Outlook 97 or IE3's Mail client. Netscape bookmarks are also automatically converted.

Mimicking the Windows "Explore" mode, IE4 allows you to view Web pages in a similar framed fashion. This pays off in the Search function, which keeps your search subject on the left, while displaying results on the right. In PR2, this framed approach is also available when viewing History, Favorites and Channels. Like almost everything else in the program, the framed Search window is an optional feature that may be controlled via an Options setting.

Internet Explorer 4.0 dramatically improves the functionality of the Windows 95/NT toolbar. For starters, any folder or Internet address can be configured as a new toolbar (just click in a blank area of the toolbar, press the right mouse button and choose "Toolbars>New Toolbar..."). Also, you can drop virtually any file you want onto a toolbar and IE4 automatically adds an icon. Then, you can drag and drop documents onto these toolbar icons to automatically open them.

The IE4 Active Desktop rarely crashed in our tests, but sometimes required two clicks to access a Web page on a site that had not been accessed before. IE4 provides an Active Desktop Safe Mode that allows the desktop to be cleanly restored in the event of a problem or offending components easily removed. Overall, reliability was slightly better than that of Netscape's browser. The Windows Integration mode offers options to hide or show icons, open files with a single or double click (once you've become used to single-clicking, it's hard to go back!), turn desktop applets on or off, and so on. The integration mode environment is entirely optional and can be turned off temporarily or uninstalled completely using the Add/Remove Control Panel, if desired. If you like Windows the way it was, you can configure it as such.

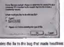
Alternatively, the browser offers a full-screen kiosk mode, in which the menu bar appears only when the mouse is in its vicinity. Elsewhere, a single scroll bar down the right side of the page is the only adornment.

Taking a page from Windows CE, IE4 allows any window to be minimized or maximized with a single mouse-click. However, what is perhaps IE4's most compelling feature is its sheer speed. In Web integration mode, Web pages load almost instantly and, indeed, Internet Explorer itself appears in less than a second. This is because it is, in effect, already loaded, but who cares?

IE4 makes excellent use of the wheel on the Microsoft IntelliMouse. One of the best features appears when you click the "wheel button" on the mouse. An icon appears where you clicked on the Web page, and you can then smoothly scroll through the contents at any speed. Alternatively, you can scroll line by line by rotating the wheel on the IntelliMouse.

The Email and News services included with IE4 closely resemble Microsoft's Outlook. Dubbed Outlook Express, the IE4 components have one big advantage over their Office 97 cousin: they are much faster. Best of all, you can easily migrate your email messages from an existing program like Eudora or Netscape Mail.

IE4's news reader displays Quick Tips in a frame on the screen, much as Startup tips are displayed in recent versions of MS Office or



IE4 contains the fix to the bug that made headlines worldwide when it was shown that Internet Explorer 3.01 was susceptible to a bug that allowed links to remote applications—including those on your own hard drive—to be accessed by users anywhere on the Web. Instead of blindly opening the file as IE3.01 did, IE3.02 and IE4 present the dialog box shown here.

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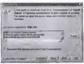


Security continues to be a major concern for Web surfers and a source of grief for both Netscape and Microsoft, as hackers and researchers the world over continue to find loopholes in browser security. The good news is both companies have moved quickly to plug security breaches and fix bugs. Here, we see a warning from Netcaster's installer cautioning the user that a Java applet is "requesting unusual access" to their computer or network.

many other programs. Both the Mail and News functions offer filtering and anti-spam functions. Overall we prefer Netscape's News Reader, but Microsoft's email client. (It's worth mentioning that Microsoft Network users cannot use this email client, as Microsoft's own ISP service inexplicably still does not support POP3 mail services.)

We've not yet fully explored Microsoft's Dynamic HTML. Unfortunately, it is not the same as Netscape's dialect (a situation we sincerely hope is resolved as soon as possible), but in superfical tests of both it seems safe to say that Microsoft's is both easier to program and more capable. Will anybody use it? Time will tell ...

At press time, Microsoft had just released the first beta of Internet Explorer 4.0 for Macintosh (also freely downloadable from www.microsoft.com/ie/). This version supports "pushed content" subscriptions, URL auto-completion, offline browsing and frames views of Channels, Favorites, Search and History windows that are both effective and fast. Although the Mac preview release of IE4 does not ship with predefined channels and Active Channels are not yet supported, it supports pages in Channel Definition Format (CDF). Thus, Channels created for the Windows release will work as is—developers do not need to create a separate Mac version. The Mac version lacks the Desktop integration features of the Windows release.

Netscape Communicator 4.01

Pros: Built-in FTP client can access sites that IE cannot reach. Better JavaScript implementation than that in Microsoft's browser results in fewer error message dialogs. TrueDoc support allows precise font control. Improved plug-in and automatic update support. Optional Netcaster feature adds "push" and "Web-top" features.

Cons: Crashes at least as much as recent Netscape releases. Lacks several features found in IE4. CSS implementation, while improved over 4.0 beta releases, is inferior to IE's. Lacks support for HTML 4.0 draft specs.

Netscape Communicator continues to offer an number of conveniences not available in Internet Explorer, such as the ability to easily determine the size of a graphic in pixels, open a frame or a graphic in a new window, and view images from within its newsgroup client.

While we prefer Communicator's built-in Web-authoring functionality (previously available as part of the Navigator "Gold" package), we find it disconcerting that long-standing bugs, such as the program's propensity to crash when items are cut-and-pasted into tables, remain unresolved. However, while few HTML mavens would choose Communicator over a standalone Web-page editor, its functions are, for the most part, more elegantly implemented than those in IE4's FrontPad—essentially the editor section of the FrontPage 97 package.

Netcaster, Netscape's implementation of a "Webtop" interface for "pushed" content, may appeal to those who don't like to mix up their OS and their Web browser as much as Microsoft's offering does. Here we see Netcaster's tool window.

Email in Communicator is considerably improved over previous releases and poses a formidable threat to dedicated packages such as Eudora and Claris Emailer. Frankly, we prefer Netscape's offering over both of these. Microsoft's Outlook Express is arguably superior in interface and approximately at par in features. Spam filtering, automatic re-routing and other advanced features are available in both the Netscape and Microsoft packages, but what sets Netscape's Mail apart is its elegant handling of attachments. A paper clip icon signals one or more attachments; a click on this icon reveals the files. Tiny arrows in the window's border allows the viewing area (essentially, a frame) to be shown or hidden, and other functions are both sensibly implemented and easy to find. Like IE4, Communicator provides an "accept no cookies" option.

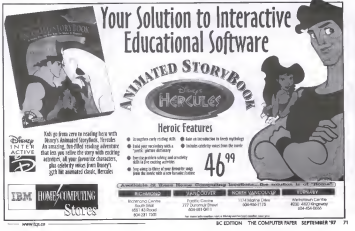
The VRML viewer bundled with the full version of Communicator (and easily installable into the base installation via Netscape's JAR automatic update system) is superior to the one in IE4 in a few ways: it supports embedded MIDI files in VRML worlds and offers better support of Java and audio extensions, not to mention the proprietary WebFX/Live3D extensions that Netscape acquired when it bought Paper Software in 1995.

Conclusion

Version 4.x of Communicator is a worthwhile download for users of Netscape 3.0. However, few users are likely to prefer Netscape's browser interface or performance in an unbiased comparison with IE4. Even with its Web/desktop integration features disabled (as easy as a couple of clicks and a restart) IE4 quickly became our favorite Web browser and email client.

Those looking for a superior Web browsing experience should check out IE4, although many people will probably turn off the Active Desktop features after a few days, as these features slow down Win95 screen redrawing slightly and may confuse some users with the changes in the desktop and mouse functionality. Nevertheless, at this stage of the game, a few issues notwithstanding, Microsoft holds the upper hand in both functionality and elegance. When IE4 is officially released this fall, Netscape's long-held dominant market position may at last be usurped. ❑

For the latest info on browsers and related developments, visit The Computer Paper's web site at http://tcp.ca



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It was bound to happen sooner or later. It is time again at Intel Corporation to decide what paths its lines of processors will take. If you happen to be one of the many who own a Pentium processor, you won't be pleased to hear that the Pentium will soon be discontinued. However, you'll be glad to know that along with the bad news comes some hope.

What's out there

Up until now, your choice of Intel processor speeds ranged from 120 to 200 MHz. It's been a while since anything under 120 MHz was seen advertised.

When we made our calls to the various Test Lab participants this month, we had our minds set on entry-level machines powered by 133 MHz Pentium processors. Imagine our surprise when several vendors told us they were informed by Intel that as of late July (near the time of this writing), it will not be manufacturing anything under a 166 MHz MMX processor.

Gone will be the P 120s, the 133s, the 150s and the plain non MMX 166 MHz chips. To further encourage consumers to upgrade, Intel is also expected to slash the prices on its processors anywhere from 20 to 30 percent, depending on the speed.

Although this hadn't been confirmed by Intel at press time, several of our contacts at various companies have given us the same information.

Assuming these changes to its processor line are true, Intel has now defined the entry-level Pentium system as being powered by a 166 MHz MMX processor. Also, Intel recently (June 2) unveiled its latest—and final addition to the Pentium line—the 233 MHz MMX chip.

This makes things quite simple, actually. You have a 166 MHz clock speed for entry-level, 200 MHz for mid-range, and the new high-end processor in the Pentium line is the 233 MHz variety. If you're shopping for something with even greater performance, you have the choice of the Pentium Pro processor and the new Pentium II processor line, with speeds of 233, 266 and 300 MHz.

Because the Pentium Pro was designed strictly for 32-bit applications, it never really caught on with the home market. It became a popular choice for servers and high-end workstations. The Pentium II on the other hand, has been fitted with the necessary registers to handle 16-bit code in non-emulation mode. This means 16-bit applications will also run significantly faster not just the 32-bit applications.

With the Pentium Pro, a 16-bit application would run slower in many cases than it would on a Pentium processor at the same clock speed. Since the Pentium II offers the best of both worlds, it will be a very attractive option not only for servers and other power hungry machines, but also for the power hungry home user with a little bit of cash to spare.

Prices have dropped significantly over the past year on every processor. This time last year, a bare Pentium 166 CPU would cost you around $575 on the street. Today, that same processor—soon to be discontinued—can be had for only $215. Likewise, the Pentium Pro processor one year ago sold for about $1,150 for the 200 MHz version. That same processor can be yours now for a mere $700.

The new breed of processors, however, is still quite pricey. The 266 MHz Pentium II goes for around $1,275 for the CPU alone. The 300 MHz versions are scheduled for production in the third quarter of '97 according to Intel, and are expected to cost quite a bit more.

The basics

If you really think about it, students don't require a great amount of computing power to accomplish their everyday school work. This is why we originally wanted to go with 133 MHz processors—because they offer more than adequate power for most, and are currently available for only $170. These low prices can go a long way towards keeping the entire system's price down, which is something students (and their parents) will appreciate.

The CPU

As we've pointed out, the new entry-level speeds are a tad higher, meaning you get more computing power. At the same time an expected price drop would put the P 166 MMX CPU at just under $300, or about $85 more than a non-MMX version.

There are, of course, alternatives to Intel processors. Cyrix has recently unveiled its new 6x86MX processor, which is supposed to offer Pentium II performance at roughly half the cost. Likewise, AMD's new K6-233 is also reported to give Intel's new processors a run for their money.

There is a catch, though. Depending on the applications you're running, buying one of these low-cost alternatives can be either good or bad. It is a known fact that the floating point unit on either of these processors is not comparable to Intel's. As a result, applications that rely on floating point arithmetic will run more slowly than on these processors' than on their Intel counterparts. This is one of the major reasons for the price difference between the various companies' processors.

RAM and mass storage

Aside from the processor, we recommend your PC be equipped with 16 MB or 32 MB of RAM. Because RAM prices are at an all-time low, it may be wise to invest in 32 MB, although 16 MB will do for most users' needs.

These days storage options are quite extensive. Hard drive sizes range from 1.6 to 6.4 GB using the IDE interface. Deciding on what size to get is simply a matter of what type of applications you will use, and how many you expect to use at any given time.

If you plan to use nothing more than a typical office suite such as Microsoft Office, Corel WordPerfect Suite or Lotus SmartSuite, then a 1.6 GB drive will be more than enough. If, however, you plan on throwing in a few games from time to time, you'd be better off investing in a drive with a capacity of at least 2.1 GB.

Games, like all applications these days, are hogging more and more precious hard drive space. A typical game will require anywhere from 30 MB to 100 MB. Load a few and before you know it, you'll be wishing you had bought something roomier. But no matter what size of drive you decide on, always try to plan ahead a little, and think of how your needs might change over the course of the next year or two. You may not want to spend a lot of money on components that are expensive today, since they are likely to come down in price in the future.

Video graphics cards

And once again, depending on what your computer will be mainly used for, you should give some thought to what type of video card you want. A basic PCI card can be found for $40. It will deliver plenty of performance if your needs are basic, such as doing "homework" in an office suite or other such integrated environment.

If, however, your course workload requires you to do some computer-assisted design (CAD) work or 3D modeling, you'd be far better off investing in the new breed of cards that offers the best of both worlds—excellent 2D and 3D performance. Some of the more popular are the Matrox Mystique, the new Millennium II, and ATI's new cards based on the Rage Pro chip.

Thus, if you plan on doing some gaming on your new machine, don't get caught unprepared. Even the most simple games today require a fair amount of graphics performance. They may not all be 3D scrollers at 30 frames per second, but many developers today are designing games to use 32,000 and even 16.7 million colors.

One such example is the new Links LS 1998 edition card, which can deliver incredible game play at 1,600x1,200 resolution at 16.7 million colors. (If you're a golf fan, this is as real as it gets on your computer screen.) At this resolution and color depth, your video card will need plenty of video processing muscle, and also plenty of RAM.

We've seen many of the popular video cards undergo some significant price cuts in the past six months. A Matrox Mystique with 4 MB onboard, for example, can be purchased for as little as $175 today. While 2 MB should suffice for many, if you can spare the extra $40 or $50, you might as well get a card with 4 MB onboard. More memory allows you to use higher resolutions and/or more colors.

Monitors

To make use of that video card, you'll have to decide what size monitor to buy. If you already have one you're happy with, enough said. If, however, you're in the market for a complete system that includes a monitor, we recommend you look towards buying a 15-inch model. For students, this screen size will offer a large enough viewing area to run the majority of your applications at a resolution of 800x600 without causing eyestrain, while at the same time keeping the overall system cost down.

It's pretty much over for the older 14-inch models, with 15-inch being the new minimum standard. However, you still see some 14-inch models included with some systems or sold seperately for $220 to $250. Get something that bears a name you recognize with a good combination of features and price. A good 15-inch monitor can be bought for just under $350, with the more expensive brands with Trinitron tubes going up to around the

Continued on page **74**

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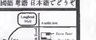

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Entry level

*Continued from page **72***

$500 mark. The more expensive monitors offer virtually the same resolutions and dot pitch as their less expensive counterparts, but tend to have more features in the on-screen display (OSD) which allows you more adjustment options. The higher-priced monitors also support higher refresh rates.

Whatever model you decide on, make sure it will handle a refresh rate of at least 70 Hz in all of its supported display resolutions. (At lower rates image flicker will annoy you, cause eyestrain, produce headaches or otherwise make your computing experience unpleasant.) For a primer on monitor technology check out the Test Lab in our August issue (available online at http://tcp.ca) where we looked at several different brands of 17 inch monitors.

Although 17 inchers can be considerably more expensive than 15-inch models they offer higher resolutions, improved tube technology and better refresh rates, to name a few advantages. For those who have a few hundred dollars to spare, this may be an area worth looking into.

Modems

In this day in age no student should be without a modem and a connection to the Internet. When working on research papers where written material is not readily available, the Internet can be an indispensable tool!

To take advantage of the Net you'll want to have a 33.6Kbps modem. Most 28.8Kbps models are rapidly being replaced by the slightly faster variety and should be completely off the market in just a few months. Under ideal conditions, a 28.8Kbps modem will allow you to download files at about 3.2 kilobytes per second (KBps) while a 33.6Kbps modem will increase that to about 3.7 kilobytes per second. The latest 56.6Kbps modems increase that to about 4.8 kilobytes per second again under good conditions.

For an extra $90 or so, you can invest in an x2 upgrade for USR modems, which will give 56.6 performance. Alternatively you can buy a K56Flex modem based on the Rockwell chipset that also offers 56.6 performance. In the long run, it's a worthwhile investment and will give you a considerable improvement in speed.

But be aware that a final international standard for 56K modems won't be finalized until next year. Neither the K56Flex nor x2 variety of modem available today can be guaranteed to be compatible with the final standard. However modem makers from both camps have gone to some lengths to assure users that they will be able to upgrade existing 56K modems to the final standard at little or no additional cost.

Be sure too, to check with your Internet service provider (ISP) to find out which type of 56K technology it supports (the x2 and K56Flex are not compatible) and whether or not there are any extra costs involved.

It's worth mentioning that 56K modems offer you 56Kbps transfer rates in one direction only—information you download. If you want to transmit information to the other end of the line, you'll be doing so at the modem's otherwise top speed (most likely 33.6Kbps).

Printers

Every student should have a printer. Although it's not a big deal to take your work into school and print it out there, it's far more convenient to have one sitting right on your desktop. There's nothing worse than having to print something out in a hurry and not being able to get access to a school printer for one of many possible reasons.

When we last looked at entry-level laser printers in March, we were surprised at how prices have dropped, and how technology is emerging. It is now possible to get a very good quality laser printer for under $500. Ink jet printers have also taken price cuts and have shown considerable improvement in print quality over the past few months.

For just a few hundred dollars you can get print quality that is more photorealistic than ever before. Although it will raise the overall cost of your complete system, a printer is a component you should certainly invest in.

Be a smart shopper

With some comparison shopping and by following the guidelines listed above, you can own a computer that may be considered entry-level but will provide you with the resources you'll need to get through the next few years of school. Whether you're in high school or on your way to college or university, having a computer is pretty much a necessity these days.

There are many great deals to be found for just over $1,000, while a complete system with monitor and printer can easily be had for just under $2,000. It all depends on how much raw performance you're willing to sacrifice in exchange for other goodies. And if you shop around, you may not even have to make many sacrifices. There are plenty of vendors out there who will offer complete systems to students for very reasonable prices.

But as always, buyer beware. If the deal sounds too good to be true, it probably is. And remember that our Test Lab looks primarily at the things we can objectively measure, such as price versus performance. We aren't in a position to evaluate variables such as after sales support and customer service. However we think they are equally important and urge you to do your homework on this part of the buying equation too.

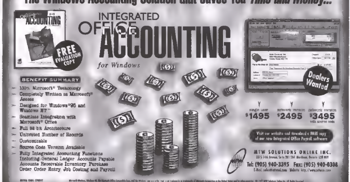
Our tests

We asked vendors to send us what they consider entry-level systems. Those who have heard of Intel's plans to cease production of processors under 166 MHz MMX have opted to send us just that. Others provided us with the vanilla version of the 166 MHz processor without MMX technology. A few even decided to send us what we had originally planned to test—processors operating at 133 MHz.

You many notice a few vendors absent from this month's Test Lab. This was due to a number of circumstances. For some vendors, the idea of putting together entry-level machines isn't all that thrilling, so they declined to participate. Others were in the middle of product line changes, and were thus unable to have their new units shipped to us in time. If you happen to see one or more names missing this month this is most likely why.

The machines were all configured to run in a resolution of 800x600 at a 16-bit color depth (65,536 colors). We used the BAPCo Sysmark32 benchmark suite to test each machine's performance.

*Continued on page **76***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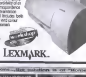

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Entry level

Continued from page ***74***

The contenders

A Open

One of the very few who provided us with a 133 MHz system, Comtronic sends us a machine that offers a good balance of value and completeness.

This system has all of the basic components to get you started at a competitive price. The processor is backed by 256KB of Level-2 cache and the standard RAM complement is 16 MB. The video card in this system is fairly basic: an S3 Trio64V with 1 MB of onboard memory. Storage comes in the form of a 1.3 GB drive by JTS. Multimedia components include the Acer FX-3D sound card and an 16x CD-ROM also by Acer. To get you on the Net there is a 33.6Kbps modem also by Acer which is upgradable to 56Kbps.

Two very handy additions to this system are the Acer 14-inch monitor and Corel WordPerfect Suite 7. At just $1 399 you could easily add a printer and keep your cost below $2 000.

Azura

This month's Azura system makes use of a non MMX 166 MHz processor. It's configured with 512KB of pipelined cache 16 MB of EDO RAM an S3 ViRGE 3D graphics card with 2 MB of EDO RAM onboard a 2 GB JTS hard drive and a Toshiba 16x CD-ROM. A great

addition to this system is the Motorola ModemSURFR offering 56Kbps download speeds using the Rockwell chipset. Priced at just $1 100 this machine is the lowest priced system in this survey and comes with a standard two-year parts and labor warranty.

Compucon

Fastech was the second of three vendors that sent us a PC equipped with a Pentium 133 MHz processor. Its configuration was fairly typical of what we had expected to see from most vendors. Although its inner workings are not all the latest technology, they still offer plenty of performance and value that any student would appreciate. To start we have 16 MB of EDO RAM a WinFast S600DX video card equipped with 2 MB of EDO RAM a sound card using the Yamaha 3D chipset and a Quantum Fireball 1.2 GB drive. To round out the system we have Panasonic's latest 24x CD-ROM drive and a speedy 33.6Kbps modem from Supra. Of the three systems equipped with the P 133 processor the Compucon machine came out on top in our benchmark tests. It carries a price tag of $1 580 and includes a three-year parts and labor warranty.

Darius

A name we haven't seen in a while here in our Test Lab this system from Darius was well configured with quality components, although it carried a higher price tag than most of its competitors. It was configured with 512KB of pipelined cache 32 MB of EDO RAM an S3 ViRGE 3D video card with 2 MB onboard a Sound Blaster 16 sound card a 2.1 GB hard drive from Fujitsu, a Panasonic 24x CD-ROM drive and a USR Sportster 33.6Kbps faxmodem upgradable to 56Kbps. Also included in the system is a pair of Yamaha M7 speakers.

While its price was higher than most others in this survey it did manage to come out on top when it comes to raw performance compared to other plain 166 MHz machines. Plus it also comes with Corel WordPerfect Suite 7 (or 8 when available). Customers can also choose either Lotus SmartSuite 96 or 97 if they desire. The system sells for $1 930 and comes with a three year parts and labor warranty.

Dell Dimension M166a

We first had a look at this machine back in April of this year. Since that time, this particular model has undergone a few component changes but it still remains Dell's entry-level system. Its configuration now consists of a Pentium 166 MMX processor 512KB of pipelined cache 16 MB of SDRAM an S3 ViRGE video card with 2 MB of EDO onboard a Sound Blaster 16 sound card a Western Digital 3.2 GB drive, and a Sony 24x CD-ROM drive.

A couple of features worth mentioning are the 15-inch monitor which is included in the price as well as the ATX form factor motherboard. It sells for $2,199 and comes with a one-year warranty on labor and three years on parts.

Hits

Computers bearing the Hits brand name have been tested in our Test Lab for quite some time. Up until now they were listed in our surveys as Daiwa, but at the company's request they will now be known by the name they display on their cases. Daiwa is the distributor through which Hits computers and other electronic components are sold.

The system we received this month consists of a 133 MHz processor, 512KB of pipelined cache and 16 MB of EDO RAM. The motherboard by Intel makes use of the new TX chipset allowing the machine to take advantage of new features such as Ultra-IDE hard drives. The video subsystem consists of an ATI 3D Xpression video card with 2 MB of EDO RAM onboard. Multimedia components

Continued on page ***81***

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- 1 44 floppy - **Fujitsu**
- **MS** mouse & pad
- **20x** CDROM drive - **Acer**
- **Sound Blaster Awe 64 - Creative Lab**
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Upgrade to MS Natural KB	$ 75	Acer 300x600 scanner	$275	Iomega Zip drive - Internal	$149
Upgrade to 33 6 USR V/Modem	$ 50	Removable hard drive kit	$ 39	3 2GB Int. Tape Drive	$299

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ENTRY LEVEL PC SURVEY

	A-Open	Azura	Compucon	Darius	Dell Dimension M166a	Hits
Processor	Pentium 133	Pentium 166	Pentium 133	Pentium 166	Pentium 166 MMX	Pentium 133
Cache size	256KB pipeline	512KB pipeline	512KB pipeline	512KB pipeline	512KB pipeline	512KB pipeline
Motherboard	Acer AP5VM	Shuttle	NA	NA	Intel ATX	Intel TX1
Chipset	430VX	430VX	430HX	NA	430VX	430TX
RAM	16 MB EDO	16 MB EDO	16 MB EDO	32 MB EDO	16 MB SDRAM	16 MB EDO
Video card	S3 Trio64V	S3 VIRGE 3D	WinFast 3600DX	S3 VIRGE 3D	S3 VIRGE	ATI 3D Xpression
Video memory	1 MB EDO	2 MB EDO	2 MB EDO	2 MB EDO	2 MB EDO	2 MB EDO
Monitor	Acer 14-inch	None	None	None	Dell 800LS 15-inch	None
Sound card	Acer FX-3D	Opti 931	Yamaha 3D	Sound Blaster 16	Sound Blaster 16	Yamaha YMF715
Hard drive	JTS Champ 1.3 GB EIDE	JTS 2 GB EIDE	Quantum Fireball 1.2 GB EIDE	Fujitsu 2.1 GB EIDE	Western Digital 3.2 GB EIDE	Quantum ST 2.1 GB UIDE
CD-ROM drive	Acer 16x	Toshiba 16x	Panasonic 24x	Panasonic 24x	Sony 24x	Panasonic 24x
Modem	A-Open 33.6Kbps	Motorola ModemSURFR	Supra 33.6Kbps	USR Sportster 33.6Kbps	None	None
System BIOS	AMI	Award	Award	Award	AMI	Award
Operating system	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95
Extras	Multimedia speakers	Multimedia speakers	Multimedia speakers	Yamaha M7 speakers	Speakers	Multimedia speakers
Windows Benchmarks						
Desktop publishing	92	116	110	132	135	112
Desktop graphics	170	217	178	241	234	177
Desktop presentation	98	129	109	147	148	110
Word processing	90	112	101	134	137	103
Spreadsheet	128	150	147	156	183	132
Database	61	114	112	128	137	106
Sysmark 32	104	130	118	148	154	118
Contact	905-479-8338	800-863-6722	604-279-9886	403-640-0002	800-387-5752	880-818-4487
Internet contact	www.cimtronic.com	www.empac.com	www.compucon.com	NA	www.dell.ca	NA
System price	$1,398	$1,189	$1,580	$1,930	$2,186	$1,249
Warranty (# of years labor, parts)	2L, 2P	2L, 2P	3L, 3P	3L, 3P	1L, 3P	2L, 2P

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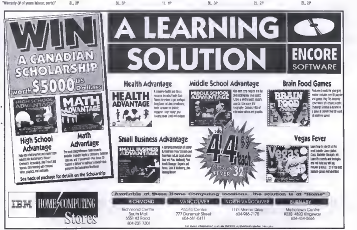
Cache size	512KB pipeline	512KB pipeline	512KB pipeline	512KB pipeline	512KB pipeline	512KB pipeline
Motherboard	ASUS TX97-E	AI5TT	Shuttle	Yuken	QDI	Intel
Chipset	430TX	430TX	430TX	430HX	430TX	430TX
RAM	16 MB EDO	16 MB EDO	16 MB SDRAM	16 MB EDO	32 MB SDRAM	32 MB SDRAM
Video card	S3 ViRGE 3D	Matrox Mystique	Tseng ET6000	S3 Trio 64V	ATI 3D Xpression	Matrox Millennium
Video memory	4 MB EDO	2 MB SGRAM	2 MB MDRAM	1 MB EDO	2 MB EDO	4 MB WRAM
Monitor	None	None	None	None	None	None
Sound card	SY1818	ESS1868	Ensa 128P	DCS-S611	SB32	SB16
Hard drive	Quantum ST 2.1 GB UIDE	Quantum ST 2.1 GB UIDE	Quantum S1 2.1 GB UIDE	Western Digital 1.6 GB EIDE	Quantum 2.1 GB EIDE	Quantum Fireball 3.2 GB EIDE
CD-ROM drive	Toshiba 16x	8CQ 16x	Toshiba 16x	8x	Panasonic 24x	Liteon 16x
Modem	Supra 33.6Kbps	Zoom 33.6Kbps	None	33.6Kbps	Motorola 56Kbps	USR 33.6Kbps
System BIOS	Award	Award	Award	AMI	Award	Award
Operating system	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95
Extras		Multimedia speakers	Multimedia speakers		Multimedia speakers	Multimedia speakers
Windows Benchmarks						
Desktop publishing	127	142	154	130	163	166
Desktop graphics	223	228	228	225	280	268
Desktop presentation	132	151	157	138	185	188
Word processing	118	134	148	125	165	187
Spreadsheet	157	183	188	164	184	207
Database	123	N/A	151	122	182	168
Sysmark 32	136	N/A	183	142	177	187
Contact	604-303-9628	514-336-2456	800-810-5368	888-973-2646	800-783-4636	800-513-7732
Internet contact	www.lcl.net	www.mynx.com	www.dacomp.com	NA	www.std.net	www.ultinet.ca
System price	$1 490	$1 895	$1 288	$1599	$1 799	$1 699
"Warranty (# of years labour, parts)"	3L, 3P	3L, 3P	1L, 1P	3L, 3P	2L, 2P	2L, 2P



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HP Laserjet 6P	$971
HP Color Laserjet 5	$5176
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HP Scanjet 5P	$510
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Canon NP2500 Printer fax copier	$719
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W/Digital 2 1GB IDE Model AC2100	$266
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Sony 15 SX/17SE2	$541/1242
NEC XV15+/XV17+	$522/885
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Mag DX1595/DX1486	$467/326
Samsung500B/17GLSI	$473/1053
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P/200 Asus VX M/B & BOXED CPU	$363
P/200MMX Asus VX M/B & Boxed CPU	$543
PPRO 180 Asus P6NP5 M/B & Boxed CPU	$817
PPRO 200 Asus P6NP5 M/B & Boxed CPU	$1035

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$Call

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IBM
Thinkpad 380 P150, 6MB, 1 08 HD, 12 1 DSTN
$2330

TOSHIBA
Tecra 740 CDT
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NEC Versa 2650CDT P150MMX 16MB, 1 44 HD, 10X, 33.6 TFT
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760E P133 1 08GB 16MB TFT	$6339
760XL P166MMX 2 1GB 32MB TFT	$5261
Toshiba Notebooks	
Toshiba 220 CDS	$call
Toshiba 520 CDT	$call
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Hitachi Notebooks	
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Notelight 382 P150 16MB 1 4 HD 10X CD DSTN	$2742
Extensa 610CDT P50 16MB 1 4HD 10xCD TFT	$3458
Travelmate 7000 P166MMX 2 0GB 32MB TFT 10CD 33 6	$5887
NEC Versa Notebooks	
Versa 2530 P133 1 08GB HD 16MB 12.1 DSTN	$2472
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NETWORKING
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Entry level

Continued from page 76

include a 16-bit sound card utilizing Yamaha's YMF718 chipset with wavetable and a Panasonic 24x CD-ROM drive

This machine offers an excellent balance of good quality components good performance and an excellent price It sells for $1 249 and comes with a warranty period of two years for both parts and labor

INET

This machine was yet another of the very few to arrive in our Lab powered by a non-MMX 166 MHz processor It made use of a good assortment of popular components such as an S3 VIRGE 3D video card with 4 MB onboard, the new Quantum ST UIDE hard drive with a capacity of 2 1 GB, a Toshiba 16x CD-ROM drive and a Supra 33 6Kbps faxmodem

Other components in this system include a quality ASUS motherboard with the new 430TX chipset and a 16-bit sound card using the SY1816 chipset In its 166 MHz-class this computer came second place in terms of benchmark performance At a cost of $1 490 which includes a copy of Corel s Office Suite, it is reasonably priced and would make a fine machine for any student

Mycomp

In our last survey the machine from Mynix Technology took first place on our benchmark suite thanks to a combination of great components and a well-designed motherboard

This month, however, the system we received was unable to make it through our entire benchmark suite crashing at the database portion of it The system was very well put together and would have certainly been in the top few had the motherboard been of a different brand The configuration we received consisted of 16 MB of EDO RAM, a speedy Matrox Mystique video card with 2 MB of SGRAM onboard the new Quantum ST hard drive with UIDE interface, a 16x CD-ROM drive and a Zoom 33 6Kbps faxmodem The system carries a price tag of $1,895 and comes with a three-year parts and labor warranty

OA Comp

The third fastest machine in this month's survey came from OA Comp It features the 166 MHz MMX processor, 512KB of pipeline Level-2 cache on a motherboard with the 430TX chipset and 16 MB of SDRAM

The Tseng ET6000 video card helped this machine achieve its overall high score thanks to its fast graphics processor and high-speed complement MDRAM totaling 2 MB The Quantum ST UIDE hard drive seems to be a favorite among several contenders in this month s lab and this machine from OA Comp was also equipped with it Rounding out the system is a 16x CD ROM drive from Toshiba a 16 bit sound card from Bravo featuring the 128P chipset and a pair of multimedia speakers Also included in this system package is the Microsoft CD Bundle 97, which consists of five popular Microsoft titles Its very competitive price tag of just $1 268 makes this one hard to resist.

Seanix

This name is known throughout Canada although we haven't tested one of these machines in quite some time This month Seanix sent us what they've decided will be their typical student PC Its configuration includes a Pentium 166 MMX processor, 16 MB of EDO RAM, a popular Western Digital hard drive with a capacity of 1 6 GB an affordable S3 Trio64V video card with 1 MB onboard and a 33 6Kbps faxmodem Multimedia is achieved through the 16-bit sound card and the 8x CD-ROM drive Although 8x CD-ROMs are virtually a thing of the past they are still quite adequate for the typical student

The system comes with McAfee Virus

Continued on page 83

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16 bit PnP Sound

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		Lease
AMD K6-166	$1,699.	$ 63./mo
AMD K6-200	$1,799.	$ 68./mo
MMX-166	$1,699.	$ 64./mo
MMX-200	$1,844.	$ 69./mo

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MMX POWER
Sound Blaster AWE-32
ATI 3D 2MB Xpression+

NOTEBOOKS

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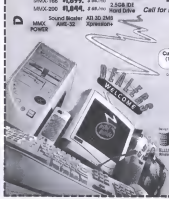

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AMD K5-133	...$1129
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Intel Pentium MMX-166	.$1219
Intel Pentium MMX-200	.$1439

Option.

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Lotus SmartSuite	$59
Canon Color Printer	$189

HomeQuest

AMD/Cyrix/IBM 5x86 PR-75 $828

16 MB EDO RAM

PR90	..$838
PR100	..$868
PR133	$887
PR 166+	.$882

Pentium Motherboard
512K PB Cache
1.3 GB HD
8x CD-ROM
1.44M FDD
PCI 1M Video w/ MPEG
MiniTower w/CSA PS
Win95 Keyboard
3B mouse & Pad

14" Digital SVGA Monitor

Options

MS-Windows 95	+$116
MS-Home Bundle	+$89
33.6K Fax Modem & Sound Card	+$99

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PowerStation

AMD K6 200 MMX $1649

K6 166 MMX	$1538
K6 233MMX	$1859

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Intel TX w/512k Cache
2.1 GB HD FUJITSU
Panasonic 1.44M FD
Panasonic 24x CD ROM
Matrox Mystique I Video 2M
USR 56K Voice/Fax/Modem
Sound Blaster AWE32 Sound Card
Powersonic MX Tower
Fujitsu Keyboard & Logitech Mouse

Option

Windows 95 SR2 Full version 2CD	$119
Canon BJC-4100	+$258
15" TTX Pro Monitor	+$359

AMD K6, the leading-edge processor Intel TX, the new & high permence mother board and the 10nS SDRAM. the fastest memory are combined for Super Power!

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MMX-200	...$1329
MMX-233	...$1539

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S3 Virge 3D Video Card 4M
AWE 32 Sound Card
Panasonic 24x CD ROM
Acer 33.6K Voice/Fax/Modem
Powersonic MX Tower
Fujitsu Keyboard
Logitech mouse

Options

Windows 95	+$119
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DreamMachine

Pentium Pro 200 $2318

Pentium II 233	..$2889
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Intel Original Motherboard
3.1 GB Western Digital HD
Panasonic 1.44M FDD
Panasonic 24x CD ROM
Matrox Mystique 4M 3D Graphic Card
USR 56K Voice/Fax/Modem
SoundBlaster AWE64 Sound Card
Powersonic MID 15" Tower
Fujitsu Keyboard & MS-mouse

Option

Windows 95	+$119
Windows NT	+$259
15"/17" NEC Monitor M500/M700	+$499/889

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150MHz	.$829
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Panasonic 1.44M FDD
PCI Video Card 1M MPEG
Panasonic 12x CD ROM
Powersonic MX Midtower
Mitsumi Win95 Enhanced Keyboard
3B mouse & Pad

Options

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33.6K Modem & Sound Card	+$89
S3 Virge 4M 3D Video	+$39
14"/15" digital SVGA Monitor	+$199/289

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TTX Professional 15" 28	$379
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Professional 21" .28/.26	$1388/1589
ViewSonic 15GS/17GS	$480/799
17PS/PT770	$919/988
21PS .26dp 21"	$2345

Motherboard

ABIT VX/HX/TX "Soft Menu"	$148/179/188
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Gigabyte HX w/512K	$189
Intel Triton 430VX PCI/512K	$119
Intel 430TX MB w/512K	$138
Intel I440FX PCI/Pentium Pro	$199
Pentium 512K K5/K6/MMX	$89
Intel Pentium II ATX, **Audio**	$398

CPU

AMD K5-75/90/100/133	$49/55/69/109
AMD K6-166/200/233	$199/289/449
Pentium MMX-166/200/233	$229/379/669

Memory

4/8/16/32MB 60nS **EDO**	$29/42/82/175
16/32MB 168pin **SDRAM**	$89/188

Video Cards

ATI VideoBooster Mach64 1M/2M	$66/79
ATI 3D Xpres. 2M	$79
ATI 3D Xpres + 2M(up)/4M	$99/119
ATI 3D Xpres + PC2TV 2M/4M	$125/159
ATI 3D Pro Turbo PC2TV 4M/8M	..$169/259
ATI TV Tuner	$149
Cirrus Logic 5436/5446 MPEG 1M	$29/32
Diamond Stealth 3D 2M	$115
Matrox Millennium 2/4M WRAM	$199/189
Matrox Millennium II 4/8M	..$299/438
Matrox Mystique II 2M/4M BG	$175/209
S3 Trio 64V+ w/MPEG 1M/2M	.$32/42
S3 ViREG 3D 4M	$64
Trident 9685 PC2TV 1M	$59

Modem

Acer 33.6/56K w/Voice Fax SVD	$99/139
USRobotics 33.6K Voice FaxModem	$138
USRobotics 56K Fax Voice	$199/219
Supra 33.6K Voice/Spkr Phone/Fax	$79/159

CDROM

Acer CD ROM 12x/16x/18x	$89/108/129
Panasonic CD 8x/12x/24x	$86/99/128
GoldStar *External 8x CD parallel port*	$219
Sony/Pioneer SCSI 12X CDROM	$149
CD Writer	..$469

SoundCard

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Sound Blaster 16/32/64	$69/119/139
ESS/Zoltrix/Opti 16bit 3D Full Duplex	$22
YAMAHA 3D PnP Full Duplex	$29/30

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Champ 1.3/2.6/2.5/3.8	$185/228/249/279
Fujitsu 1.7/2.1/2.87/3.6GB	$229/248/278/329
Western Digital 1.6/2.1/2.5/3.1/4.3G	$239/259/269/319/389
Quantum Ultra ST 2.1/3.2/4.3/6.4GB	$269/315/389/529

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Brother	541 Laser (refurbished)	$318
	Laser HL730/760DX	$459/588
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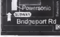
HP	Laser 6L	$639



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Entry level

Continued from page 81

Protection v2.04, Trio Communications Software and Carbon Copy. The only thing we would change on this system would be the video card. Although it certainly helps keep the system cost down, it doesn't offer much in the way of performance. Other than that the system is ideal for anyone looking for an entry-level machine.

STD

The second fastest system in this month's survey comes from STD. The CompuPartner brand is quite familiar to us here at *TCP* Test Labs, having been part of our testing process for quite some time now. It may not be the cheapest system in the survey, but it sure packs a punch when it comes to offering excellent components while keeping the price well under $2,000.

The 166 MMX processor is helped along by 512KB of pipelined cache and 32 MB of SDRAM. The ATI 3D Xpression offers both good 2D and 3D performance. Other popular items include the Sound Blaster 32 sound card, the Quantum ST 2.1 GB hard drive, the zippy Panasonic 24x CD-ROM drive and the Motorola 56Kbps X2 modem.

This system incorporates a jumperless motherboard from QDI, which allows you to control your system's speed from within the BIOS. This can save you time, while reducing the worry about putting the wrong jumper in the wrong place if you upgrade the CPU. Software titles bundled with this system include 01 Communicate! And the Microsoft Plus Pack for Windows 95. The system is priced at $1,799 and includes a two-year warranty on parts and labor.

Ultinet

Ultinet is well known for its colorful advertisements, which feature out-of-this-world prices on the systems they sell. For this particular survey, it managed to build the fastest computer and price it so that every student will want one.

The system is powered by a 166 MHz MMX processor, 512KB of pipelined cache and 32 MB of SDRAM. The addition of a Matrox Millennium with 4 MB of WRAM definitely helped this system achieve its high score. Storage won't be a problem with the 3.2 GB Quantum Fireball hard drive, which offers not only plenty of storage space, but also improves overall system performance. Finishing off the system are components such as a USR 33.6Kbps voice/faxmodem, a 16x Liteon CD-ROM drive and a Sound Blaster 16 sound card. The package includes a "mini-office suite" and a two-year parts and labor warranty. The price tag reads a modest $1,699.

Editors' Choices

Due to the nature of this month's review our awards will be handed out for the various classes of processors we tested. Our normal policy is to award three winners, one for a Performance category, one for Price/Performance, and one for Overall Value. Because our focus this month was less on performance and more towards overall system value, we will award three awards for that category.

Pentium 133 Class
Hits
In this particular class, the computer from Hits is a clear choice. It offers everything an entry level system should have at a price that's very hard to resist.

Pentium 166-Class
INET
The system from INET is not only well priced, but offers great performance with a slew of well-known quality components.

Pentium 166 MMX Class
Ultinet
If you want an entry-level machine that will last you for quite some time, this month's Ultinet system should not be passed up. It offers components that would normally make up a higher-class machine but maintains an entry-level price. ◻

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Keyboard Logitech Mouse Windows 95

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*32 meg SDRAM

Everex MX Stepnote
Pentium 133 Mhz Notebook
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6.3 lb, NiMH Battery
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Win95 Cd, Encarta, Works, Money
Built in Sound & Speakers
3 yr warranty
$2399

Daewoo 150MMx Notebook
Intel Pentium 150MMX
12.1" TFT Active Color
2.1G Hdisk, 40 meg ram
TouchPad, 10X CD-ROM
6 lb Lithium Battery
1.44mg Floppy drive Carrying Case
Windows 95 PCMCIA slots
Built-in Sound & Speakers
3 yr Warranty
$3898

Media GX 166+
32 meg ram
Built in 2 meg VGA
Built in Sound Card
2.1G Hdisk 1.44 meg Floppy drive
16X CD-ROM
14" NI Low Rad SVGA monitor
Win 95 keyboard, Mouse
Gigabyte SiS Chipset
Windows 95 Release 2.0n
15" tower case 230 watt
$1259

Intel Pentium P166MMx
16 meg ram, 512K cache
2.1G Hdisk, 1.44 mg Flpy dr
16x CD-ROM, 16 bit sound
Cirrus MPEG 2meg PCI
15" NI Low Rad SVGA Monitor
Win 95 keyboard mouse
ASUS Triton VX 97 board
Windows 95 Release 2.0n
15" Tower case 230 watt
$1479

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Epson Stylus 800 Color inkjet 1440x720dpi	$399
Canon BJC4100 Color inkjet 720x360	$249
Canon B640 Plain Paper Fax Machine •NEW•	$449
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ALPS MD2010 DrySub Color Printer 600 dpi •NEW•	$349
Microtek E6 Color Scanner 600 dpi w Photo Impact	$409
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BY ROD LAMIRAND

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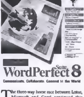

The three-way horse race between Lotus, Microsoft and Corel continued this summer with the arrival of the newest version of WordPerfect Suite 8. Racing to be leader of productivity software, known as suites in the business, each horse and rider is jockeying to become the standard word processor, spreadsheet, database, and presentation program in your home or business.

The neck-and-neck race saw Microsoft's Office 97 taking a strong lead this winter with an upgraded set of office applications. *The Computer Paper* put Lotus in the lead this Spring with its group-centric and Internet savvy SmartSuite97. Now the Canadian horse WordPerfect Suite 8, is pulling up from the back. If any product can pull ahead of the favorite, Office 97, it's this one.

WordPerfect, the one-time de facto standard in word processing, has had a couple of homes over the past decade. The DOS-world leader slipped in its transition to the Windows world and, for a time, appeared to be fading away. Novell's purchase of WordPerfect Corp. did little to change the product's fortunes.

However, WordPerfect's acquisition by Ottawa's Corel Corporation and the consequent improvements revived and strengthened the suite of products. Now, Suite 8 has arrived with the depth and breadth of applications and features to make this a world class offering.

The excellence of these programs and the company's aggressive pricing add up to a good shot at success. If the company can crack the American market, which is strongly dominated by Microsoft Office, and then by Lotus SmartSuite, it will have a real winner on its hands. This won't be easy but the rewards would be commensurate with the challenge.

Appointing the suite

Corel WordPerfect Suite 8 comprises four main components and a number of applets and extras. WordPerfect 8 is the upgraded word processor, Quattro Pro 8 is the company's spreadsheet, and Presentations 8 is the presentation software offering.

CorelCentral 8 is a new addition to the package, one which Corel hopes will become your information and communication centre. The Professional version of Suite 8, which should be available by the time you read this, also incorporates Paradox 8, a relational database.

The suite comes on CD-ROM and requires

Continued on page 87

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Corel Word Perfect Suite 8

Continued from page ***85***

Windows 95 or NT 4.0, and a 486 66 MHz PC or better with 8 MB of RAM. A typical install takes 120 MB of disk space and you will need an Internet connection and multimedia components to take advantage of all the features. The box contains two manuals: one, a 500-page User's Guide; the other, a 200-page reference for the images, fonts and photos.

Pricing of the product fluctuates, with the full version costing around $400 and the upgrade approximately $200. The upgrade version is identical to the full version except for the inclusion in the former of a small program that searches your hard drive for a copy of a suite that qualifies. This includes any version of Microsoft Office, Lotus SmartSuite or WordPerfect as well as Microsoft Works and Claris Works.

It is not possible to cite all the various features and functions of even one of the suite's programs. Today's word processors, for example, are of such maturity and functionality that few users ever do more than scratch the surface of the program's capabilities. Even just one area of a program's features, such as version control, can have numerous functions and abilities. Corel sent along a sheet, comparing the features of their product against just one of their competitors, on a one by one basis—the list was over 500 items long!

Then there are the many interface design and aesthetic choices that are made and may or may not please any particular person. Also, when something new is introduced, the very newness of the thing can obscure its value. It could be that, only by working day in and day out with the new feature, a fair evaluation can take place. A few months down the road the new way of doing things might suddenly make sense. It is for these reasons that only time will tell which improvements win converts and repeat customers, and which were all flash and no substance. With that in mind, here is a run-down of the new suite.

Suite-wide Improvements

The new PerfectExpert provides help when and how you need it. Unlike Microsoft Office which uses animated characters to try and help you, Suite 8 offers PerfectExpert, a vertical help area on the left of your screen. Buttons on PerfectExpert offer to perform common functions or explain certain procedures.

This is a good development and works well. Consistent menus and tools across the core applications improve ease of use and make learning how to do something in one program useful across the board. That is the main idea of a suite but it sometimes gets forgotten. Each of the suite's core applications writes to hypertext markup language (HTML) and can link to the Web using Corel's Barista technology.

The Barista printer driver allows a user to create a file—a multimedia presentation with sound clips, for example—and then publish it as a Java page. Other people can then access the information in any Java-enabled Web browser.

WordPerfect 8

Shadow Cursor lets you point, click and start typing anywhere on the page. What you see is a little gray line that jumps around in the text as you move the mouse. The benefit is that you won't click in the text and then have to use the arrow keys to get the cursor to the correct point.

The new Drawing Layer lets you place objects directly on text, and add color gradient fills or patterns. New SGML (structured general markup language, a superset of HTML) features provide a graphical interface for creating structured documents. Hyperlinks are created automatically by typing text beginning with "www," "ftp," "http" and "mail to." Table enhancements let you size table rows, and join and split cells with a single click. The usual editing tools, such as Grammar-As-You-Go and Spell-As-You-Go are here and WordPerfect has maintained consistency with previous versions of its file format.

The word processor is very good and this suite's strongest point. One criticism, the program offered to open a Microsoft Word 97 document but couldn't. Other Word 97 files also defeated it.

Quattro Pro 8

Corel's spreadsheet is good and finally goes WYSIWYG, letting you work with your pages as they will appear when they are printed. There are many PerfectExpert automated functions that will thrill a spreadsheet user. For example, new verification tools such as Cell Reference Checker and the Auditing feature, help you improve accuracy. The QuickCell feature lets you drag a cell to the Application Bar and see its updated value as you change other cells in the spreadsheet. Quick Filter removes irrelevant data to let you see only key information. There has been some effort spent in improving this program and it shows. ➤

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Presentations 8

As you would expect from the makers of CorelDRAW the well-known graphic program that is really a graphic suite, Presentations makes things look good There are 180 professionally designed backgrounds and layouts You can tailor a slide show to different audiences without saving them to multiple files.

Show On The Go bundles your slide show for distribution to others who may not have Corel Presentations Show It! publishes presentations to the Web with full support for animation, sound graphics and video Over 120 transition effects are available

Navigation tabs help you move around quickly within your slide show and you can import from Microsoft PowerPoint, Lotus Freelance Graphics and Harvard Graphics They have even added support for Intel's MMX technology to accelerate transitions and speed drawing

CorelCentral 8

CorelCentral is a new addition to the suite and unfortunately unavailable at this time The product looks good We received a demo CD and have read the literature but Corel declined to let us load a beta version.

What is in the box is a voucher that will allow the user to send away for the application when it is completed sometime in August. Also unfortunate is that Corel will charge shipping and handling fees to these users. This seems like a bad idea.

The application on the other hand seems like a good idea The combined personal information manager (PIM) and communications centre uses an address book and calendar like a PIM or contact manager but also works with email and real time voice conversations like an Internet program Linking information is touted by the company as very useful because it will allow users to connect card files, Internet addresses, email or other files to any of these listed items.

CorelCentral will incorporate Netscape Communicator software and its features The integration of Netscape's leading browser and email program will bring this application's abilities to the forefront of emailing programs CorelCentral will be much like Microsoft Office 97's Outlook, let's just hope it is a little faster.

Paradox 8 (Professional version only)

Corel's database is a decent program but does not meet the challenge laid out by its competition Where it is strong, is in HTML and Java tools. The interface has been re-written and that is good Borland Database Engine 4 0 is included to support performance improvements and optimize SQL queries. The professional version also includes a Web site builder and Time Line a project management program.

Extras

Corel Photo House 1 1 is a handy image-editing program, also sold as a separate product Envoy 7 Viewer is an electronic document viewer and Corel's competitor to Adobe Acrobat The excellent reference texts included on the CD-ROM are all Envoy files.

Desktop Application Director (DAD) is a customizable taskbar that might be of use to someone but we didn t use it Corel Versions is archiving software that helps you keep track of document revisions.

The suite also comes with 1,000 TrueType and Type 1 fonts (100 are installed the rest wait on the CD-ROM) 10 000 images with an excellent full-color reference guide and the Corel WordPerfect Suite Software Development Kit (SDK)

We've only scratched the surface here The suite is sweet and a real treat The graphics are neat and the feature set pretty hard to beat It will take some time of living with this upgraded suite to really find out how well it stacks up in this the most mature software market there is ❑

Contact: Corel Corporation 1600 Carling Ave. Ottawa ON K1Z 8R7 Web site http://www.corel.com

Computerizing a school

Continued from page 39

Continuous planning

The big project for next year will be high speed Internet access. Although the school had limited Internet access through the use of a local ISP in the last school year it was really only on an experimental basis

The plan in the fall is to go for the lowest-cost, highest-speed Internet access Amongst the options under consideration is a version of Rogers WAVE (which should be available in our area within a month or two of school returning) or BC Tel's planned ADSL (asynchronous digital subscriber line) service.

The other issue is the "filtering" software that will be used to ensure students only gain access to sites that are appropriate to their age level This is again a matter for further research and will probably be at least as educational an experience as last year ❑

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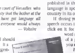
Learning language on your own

A quick look at several language programs

BY ROSS MACDONALD

Therefore is the name of it called Babel, because the Lord did there confound the language of all the earth, and from thence did the Lord scatter them abroad upon the face of all the earth
—Genesis, 11 19

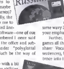
I am not like a lady at the court of Versailles who said "What a dreadful pity that the bother at the tower of Babel should have got language all mixed up, but for that, everyone would always have spoken French "
— Voltaire



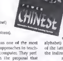
Right off the top, I should mention that it's already been suggested I spend more time mastering English instead of turning my attentions toward the more exotic of our planetary tongues

But then, who listens to editors anyway (except maybe when it comes to assignments)? Which is, quite incidentally, the means by which it fell to me to take a look at this protracted line-up of language learning software—one of our august *TCP* editors remembered I once said "ciao" on the way out of the office and subsequently filed me under "polyglottal pedant" for future use Such be the way of publishing

Regardless I ended up with a bit of time in which to test my abilities with the following packages



Russian Now!
Talking Translation Dictionary (Russian)
Power Chinese
Easy Translator
From Transparent Language
Prices. US$48 95 (Russian Now!)
US$29 (Talking Translation Dictionary) US$89 (Power Chinese),
US$49 95 (Easy Translator)



Transparent Language has one of the most accessibly sophisticated approaches to teaching languages with the computer. They preface all their discs with the proposal that learning another language will come in useful to just about anyone whether at home in school, conducting business or working in a government agency (whatever work it is people who work in government agencies do)

Further, Transparent Language claims that no matter which of the many languages they have CD-ROMs for, they are able to teach the "real" language as used by native speakers of that language as opposed to the "Dick and Jane" version which they ascribe to their competitors

The means to this end is by an immersion process which makes use of actual original material for your exercises... things like articles from real newspapers and magazines published in the country where your chosen language is spoken or the literature of that country in its original form.

If during your reading, a word or part of speech occurs that you don't know you can click on it for an explanation or initiate a word search showing every example of a particular word in the article you're reading

Pronunciation, on the other hand, is looked after by word dictation and pronunciation from native speakers of the language As the word or sentence is spoken one of those wavy voice analysis graphics is drawn Then, when you speak (these programs will record and play back your voice if you have a microphone hooked up) the same wavy line shows up so you can compare your emphases

Further, you might want to try the four games all the Transparent Language programs share Vocabulous (fill missing words into sentences), Unscramble (put a scrambled sentence into the proper order) Plug 'n' Play (a video with narration and text that you have to try and understand), and Crosswords (the same in any language)

There are also facilities for making personal notes and little windows into which you can jot down comments at any point in the story you're reading

A roundup of other features includes a customized vocabulary list, alphabet reference (which names, pronounces and gives examples of each letter in the alphabet) and grammar basics—albeit many of the latter are as useful as "[the dative is] the indirect object used in impersonal constructions the object of some verbs and prepositions "

Next from Transparent Language comes a companion disc WordAce! Talking Translation Dictionary—a whole different product but one which directly accompanies whichever Language Now language you're studying These sport spell check and verb conjugations, and also work as translators for individual words from any word processor program or your email and Internet downloads.

Many features from both the language disc and the dictionary came to partic ➤

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ularly handy, as I was presented with the Russian learning program and dictionary, so some extensive briefing on that pesky Cyrillic alphabet was necessary

But, ahhh, Grasshopper, while one might think Russian is tricky, one is only marginally prepared for what's required by our most venerable Pacific Rim trade partners. Power Chinese immediately promises to be a long and arduous journey It comes with two booklets; the first, an exercise book, the other, an installation guide and glossary of characters and phrases. The installation guide cum glossary explains early on that there are more than 4,000 Chinese characters, and in order to make the learning exercise practical, they've chosen to glean only the most useful 600 With those, they say, "you will (a) NOT get into trouble and (b) get yourself out of trouble should (a) fail!"

The very first lesson shows just how strenuous even that reduced task might be It demonstrates how, by simply changing the tone of the word "wen", you change its meaning from "to ask" to "to kiss"—already sounds like trouble to me.

The interface is very sophisticated with lots of color and animation to guide you toward the multitude of detail involved in seeing a Chinese symbol, hearing how it's pronounced, watching how to draw it and getting a deconstruction of that symbol in terms of the meanings appointed to the individual pen strokes and characters The only curious characteristic I encountered was that it wasn't possible to make the interface full-screen, the whole thing works inside a window that takes up about half your screen area.

Originally created by a company called BayWare, Transparent Language apparently liked this product so much, they bought the company Which also explains why it's very much different from the Russian disc (which shares a look and feel with all the rest of Transparent Language's languages) Transparent Language has also revised Power Japanese, an earlier version of which *TCP* reviewed—and liked—a few years ago when it was still a BayWare product

And finally from Transparent Language came my favorite Easy Translator, a very handy item if you find you are having rather less than success with the other products (read can't be bothered learning the language so just have it translated by the computer instead)

And it actually works! I am gifted with an almost fluent command of pidgin German (the reward of many weeks of shirking before dropping the course in university), so I was able to test this translator by writing something in English, pouring it through the translator and having it coughed back up in German.

And, as near as I can tell the translation was correct Alas, however Russian is not one of the languages that this package will translate to so I wasn't able to test it on my Russian friends (must be due to that pesky Cyrillic alphabet again)

Easy Translator, however, will come in very handy for me as I actually have dealings with German and Spanish publishers and it works with those two languages as well as French. It'll be interesting to see how those continental editors react to receiving my purple prose in an ostensibly ready-to-print format for a change. I should add that Easy Translator operates the other way around too, from a "foreign language" to English

In a nutshell the program works by taking any document you paste to the clipboard translating it and putting it back on the clipboard This one's likely to get the most use of all from me

Easy Language Conversational Skills: Spanish, French, English, German
(Two-CD-ROM set)
From IMSI
USA
Price. $49 95

IMSI's language packages are no strangers to us as I reviewed another product called EZ Language last year. This newer version—more plainly christened Easy Language—is somewhat similar in proposing to get us conversing in one of several languages—Spanish (Latin American that is), English (American that is), French or German—in a natural and

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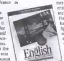
conversational style and with minimal discomfort.

Easy Language does not, however, propose to teach us the actual language of our choice. Instead, learning common phrases, such as those necessary for ordering food, getting directions, shopping and generally making yourself scarcely understood in Latin America, the United States, France or Germany is the modest goal.

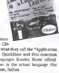


Some grammar and pronunciation basics are also included, as is the ability to record yourself and play it back to test your new abilities. For fun, you can have your recorded self played into the conversational exercises as a substitute for one of the actors.

I, as you might expect, took on the German and learned—within only minutes mind you—that German for peanut butter is erdnussbutter, apparently a much prized delicacy in German restaurants.

In simplest terms here, the exercises for each of the four languages are structured around 10 activities with a set of subroutines in each of those. And, of course, there are some games to test yourself with but they deliberately lack a help menu and scores are recorded. So watch it!

Packaged as a two-CD-ROM set, the second disc in Easy Language contains vocabulary and translator utilities as well as a multilingual word processor. Also included is a very thick user guide-slash-textbook that includes exercises and tests for the language of your choice.



The Rosetta Stone Language Library: Italiano
(Two-CD-ROM set)
From: Fairfield Language Technologies
Price: US$349

Rosetta Stone comes as two CD-ROMs. One is what they call the "Application Disc" (installs QuickTime and files common to all the languages Rosetta Stone offers) while the other is the actual language disc itself. In my case, Italian.

Rosetta Stone takes a much more pedestrian approach to language learning by employing the tried and true method of image, text and audio repetition through progressively more sophisticated sentences. If you stick with it, though, those exercises grow into increasingly more conversational scenarios.

Though I found this a less engaging means to polyglottality, the program has won accolades from several other critics, so what Rosetta Stone programs lack in novelty can be excused by their efficiency. I must admit that even I was able to distinguish an airplane from a dog after only a few minutes with this program—and that's with absolutely no previous Italian experience (save for maybe Maria in Grade 10, but that's another story).

Also, Rosetta Stone takes an equally prosaic approach to getting you started. It is somewhat less than helpful in getting the lessons started up, leaving it to you to figure it out from the two manuals and the Read Me files.

Rosetta Stone also makes language CD-ROMs for French, Russian, Dutch, Mandarin Chinese, Spanish and Japanese.

Let's Talk English—Vocabulary and Pronunciation Skill Builder
Ingles Your Way—Un Curso Completo Interactivo
From: Syracuse Language Systems
Price: US$28.95 (Let's Talk) US$79.95 (Your Way)

I also had these two programs to look at, but quite simply had too much skill for the former while the latter is entirely in Spanish—including the box and all the instructions. I didn't have time to learn Spanish from one of the other programs in order to relearn Ingles from this one so I had to let it go.

It is worth a mention, though, that Syracuse Language Systems offers an extensive catalogue of computer-based discs in the Your Way and Let's Talk series for a variety of languages including Spanish, French, German, Japanese, Hebrew and Italian. The company also has phrase-book-style titles called TriplePlay Plus! for many languages.

One of the interesting features of the Let's Talk programs is a speech-recognition engine from Dragon Systems. With this system, you speak phrases into the (supplied) microphone, and the program evaluates your pronunciation.

Buying time

All in all, the Transparent Language or Rosetta Stone products (and Syracuse Language programs, although we had only limited exposure to them) will be of the most use to anyone wishing to approach fluency while the IMSI package will be of use to travellers who simply want to avoid foreign jails. Any of these disks might propel me toward further linguistic acumen, if only I wasn't already busy with my Latin and hieroglyphics studies.

Now when is somebody going to recognize the hordes of us waiting for tutorials on those!?! ❑

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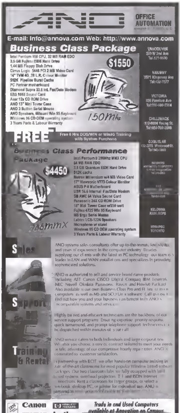
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Information technology opportunities huge in China

BY GEOF WHEELWRIGHT

When you talk about multilingual computer products—and software produced in languages other than English—it seems there is one huge potential market that is currently being vastly under served.

According to Dennis Phillibun from market research company International Data Corporation's (IDC's) Asia Pacific office, that sector lies in Asia—and particularly in China—where PC penetration is low and the potential for growth is enormous.

"The biggest opportunity will be in selling information technology in Asia Pacific," he explains. "It [the region] currently accounts for only 26 percent of [annual information technology] revenue but 55 percent of the world's population lives here," he says. As an example, he cites Intel Corporation. Until a reorganization of its worldwide infrastructure two years ago, Intel treated Asia Pacific as part of a general category for the "rest of the world" that did not count amongst its prime markets.

He says that is changing, and fast. "There is not a single market in China that is not booming; infrastructure projects in China are huge," he says. "China has surpassed India as the opportunity of choice. We are seeing major multinational vendors coming in with service opportunities. There is a unique opportunity in China."

One big part of that opportunity is making the Internet relevant for Chinese users. Aside from the political issues of just what the mainland Chinese government will permit its citizens to see—and the proportionally small use of PCs and modems in China—another big stumbling block lies in the lack of Chinese language Internet tools and content.

Calgary connection

A Calgary company called Zi corporation has taken up the latter challenge and been met with huge interest by an apparently eager market. In June, for example, the company announced a joint development memorandum of understanding with Apple Computer International Ltd. for future collaboration on Chinese language products for the MacOS and Apple's next-generation operating system, Rhapsody.

Under the terms of the memorandum, Apple will assist Zi in developing and marketing Chinese language products in a number of categories: Internet and Intranet, word processing, education, and document processing and publishing.

While Apple was happy to have a good story to tell in Chinese-speaking markets—and have a way to highlight its efforts to help developers create new applications for both the Mac OS and Rhapsody platforms—it was Don Smallwood, senior vice-president and head of Asia Pacific for Zi Corporation who had the most to gain.

Smallwood said the collaboration with Apple "represents the company's first significant endeavor with a technology company doing business in our target market." The first stage of this alliance is a software licence agreement signed by the two companies, which will see Apple bundle Zi Mail (a Chinese language email package) with Apple Macintosh personal computers in China and Taiwan.

As part of the agreement, Apple has a non exclusive licence to bundle Zi Mail with the MacOS Chinese version. Zi Mail uses Zi Input, a basic Chinese character input system for personal computers that Zi says is simple to learn and easy to use.

The company also sells Zi Browser (an Internet browser allowing the viewing and input of English or Chinese characters) and runs an Internet/Intranet consulting company called Zi Solutions.

This is all possible in Mainland China because Zi has cannily entered into a "strategic partnership" in the People's Republic of China with Beijing Tengtu Culture and Education Electronic Development Co. Ltd. The existence of this partnership allows Zi to market its products to the Chinese education, government and business markets. The partnership has official acknowledgement from China's state education commission, ministry of post and telecommunications, and ministry of electronics industry.

Watching from Taiwan

One company keeping a close eye on these developments is Taiwan's Acer Group, which has made it known recently that it also sees a huge opportunity for Chinese-language Internet content and software on the mainland.

Acer software subsidiary Third Wave Publishing is aimed at taking advantage of this opportunity—and the man who runs it says the company will do so with vigor.

According to T.C. Tu, Mainland China will become a very important software business sector. And he says Taiwanese companies such as Acer are well-positioned to have an impact. As an example of the kind of thing his company can do, he cited the "Chinese Cyber City" site his company helped created in California for Chinese residents in major cities throughout the United States. ❑

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Apple eases browsing in a second language

BY JAMES OMURA

Apple Japanese Language Kit 1.2 for MacOS
From: Apple
Test system: Apple Macintosh LC630, MacOS 7.5.5
Price: Varies by language, but all are under $200

While the World Wide Web does circle the globe it doesn't really bring it together. The boundaries of language are built into current computer technologies creating a stratified world.

In general, people who only read Roman character based languages, like English or French, are limited to experiencing the ASCII based world. For now, that's by far the biggest community on the Internet, and it will probably stay that way for a long time to come. But if you want to "slide over to another dimension" linguistically, things can get tricky.

For other languages, it's not enough to learn to read the language yourself. You have to change your computer. There are adapter kits for the major computer systems, including Mac and Windows. For the MacOS systems, Apple has devoted much work to "localizing" computers in order to build its market.

The main work of "localizing" a computer required the company to write a version of the operating system that would support the character system, and then replace the various text cues such as menu labels and error messages, with those written in the local language.

Apple developed a systematic approach to localization using a common text system adapting interface called "WorldScript," and encourages all programmers to adhere to this text interfacing standard. Most text handling programs written for the MacOS in recent years can be used on any recent MacOS computer around the world. But the catch is the dreaded "most" word. The older the program, or the older the operating system version, the more likely it is to have problems.

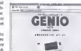
Currently, Apple has language kits for Arabic and Persian, Chinese, Cyrillic (Bulgarian, Russian, Ukrainian, Byelorussian, Macedonian, and Serbian), Hebrew (Hebrew and Yiddish), Indian (Hindi, Sanskrit, Gujarati, Marathi, Punjabi, and Nepali), Japanese and Korean. For this article, we looked at the Japanese kit.

The latest Japanese Language Kit is version 1.2. It comes on a CD-ROM or on 12 floppy diskettes. Minimum requirements for a full installation are System 7.1, 5 MB RAM (8 MB for System 7.5 with QuickDraw GX installed, 16 MB for PowerPC with System 7.5 and QuickDraw GX installed) and 30 MB storage space. However, upon beginning the installation, I found that a minimum installation needs only 5,849K8 including the basic Osaka font (3.4 MB).

The Apple "Kotoeri" Japanese text input system has a number of ways to enter the various Kanji characters. From what I have heard, it's a pretty good interface but for Web browsing I didn't need it.

Multilingual browsers

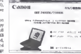
I tried the latest versions of the three major browsers on the MacOS. There are differences in encoding options and selection of encoding options. All settings were generally default except where necessary. All three browsers displayed Japanese characters improperly in the title bars during the tests. I did not look for a specific setting to adjust the title bar. It may be that properly adjusted the title bars would also be displayed properly. Since title bars are generally unimportant, it was a minor inconvenience.



The Apple CyberDog 2.0 Web browser has no problem displaying this Web page, which shows a new product that probably will not be brought to North America. But the Toshiba Genio is of interest because it is a small PDA based on the Geoworks operating system, which is used by the Hewlett-Packard OmniGo, but reading the page further (not shown in the picture) we find it is running on a MIPS-based CPU!

Apple CyberDog 2.0

If the default language is set to English in the Preferences, then every page is shown in English first. The Encoding selection made in the drop-down menu selects only for that page. Encoding options are JIS, Shift-JIS and EUC. CyberDog will not recall pages off line in a later session, even if "refresh" is set to "never."



A Canon Web page displayed with Microsoft Internet Explorer 3.0 beta. Although Canon has stopped laptop sales in North America, they still have a selection of competitive products in Japan. None of the North American Web browsers display Japanese characters properly in the titlebar but this might have been correctable with further adjustment. It was a minor inconvenience.

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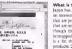
Microsoft Internet Explorer 3 0 beta
If the default encoding in "Options" is set to English the drop-down menu selection must be made for every page Encoding methods include auto-detection JIS, Shift-JIS and EUC. Reloading a page in a later session brought it up in Western but an error occurred when I tried to switch it to Japanese auto-detect encoding



There are many products which have never been brought to North America. Using the Netscape Navigator 3 01 browser we find the Sharp PI-6000 which is a relatively established PDA in Japan. Here is a recent report of an application for this product.

Netscape Navigator 3 01
The drop-down menu selection "holds" for the session and carries forward to the next Encoding methods include auto-detection JIS Shift JIS and EUC There is no "ordinary JIS" Reloading a page in a later session worked, and since the encoding had not changed it came up in Japanese

What is there to see?
Japan has a special attraction for people with an interest in technology There are products that are presented on the Japanese Web pages that are not shown on English Web pages and though that won't stop you from seeing a bitmapped image, with some learning, there is a lot that you can find out about these products. ❑

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Multilingual Net

If you are an ardent Internet surfer who makes heavy use of the many online "search engines" available on the World Wide Web to find the information you need you know how difficult it can sometimes be to use them

Imagine just how much more acute that frustration would be if your first language was not English, and you had to formulate all your Web queries in a language you did not commonly use That is the dilemma facing many European Web enthusiasts as they find themselves having to simultaneously improve their mastery of the English language while trying to search on the Internet.

A Belgian company with strong international high-tech experience recently announced that it was tackling this problem by developing an online translation service that would help translate both queries and Web search results for non-English speaking Europeans

Lernout & Hauspie Speech Products plans to have an Internet-based multiple language translation service up and running by the end of this year, after showing a preview of what it has planned at the annual CeBIT trade show in Hanover, Germany, earlier this year

The company says when its planned multilingual search capability is up and running, users will be able to have a German-language search request translated into English, executed on any popular search engine and then have the results translated back into German.

Lernout & Hauspie's work is the result of a $35-million agreement recently signed with the Brussels Translation Group for the development over the coming two years of these translation services in multiple languages for the Internet.

As a result, the company has started a new translation group of more than 100 linguists and engineers to begin development in Brussels. Plans are to launch a pilot translation service by the end of 1997, and full service in the beginning of 1998 In the initial phase it will support the following languages English to German, and English to Spanish Additional language pairs are planned for later that year.

The company plans to offer several levels of service. basic machine translation for a flat monthly fee, unlimited specific vertical-based machine translation for a higher fee, and combined machine and human translation for a fee per page.

It is also in discussion with various Internet service providers and telecommunications companies to jointly promote and market these services.—*Geof Wheelwright*

Pilot look-alike from Sharp • Sharp Electronics of Canada has introduced the SE-500 Mobile Organizer On the surface the SE-500 looks like the wildly sucessful Pilot from US Robotics. It includes a set of basic organizer tools (scheduler, contact manager calculator expense tracker database and electronic ink-based note taker) as well as an infrared port docking station, built in 14.4Kbps modem and email and synchronization software (a light version of Intellisync from Puma Technology Inc.) It provides automatic synchronization with Microsoft Outlook 97 Act! 3.0 and Lotus Organizer 97 Other files can be moved from the SE-500 to a Windows PC using the Windows Clipboard.

One notable difference between the USR Pilot and Sharp's SE-500 is Sharp's lack of a built in handwriting recognition system. The Pilot offers the Graffiti character recognition system but with the SE-500 the pen input produces only a bitmap image of the pen's tracing To input ASCII text the unit does include an onscreen keyboard (as does the Pilot) that allows you to peck out words using the stylus tip. Hopefully third-party developers will step in to fill this deficiency

The suggested retail price of the SE-500 Mobile Organizer is $399 Sharp officials said it is expected to be in retail stores by mid-to late August.

Contact: Sharp Electronics of Canada, Tel: 800-56-SHARP

Getting the fax from WinFax 8

BY ROD LAMIRAND

WinFax Pro 8.0 from Symantec
From Symantec Corporation Canada
Estimated street price: $129 95

Often in the top-10 software sales lists, and a long-time favorite of both homes and businesses, WinFax Pro is back, better than ever

Version 8.0 is 32-bit fax and telephony software that supports both Windows 95 and Windows NT and includes a number of new features such as support for voice modems, dual modems and Internet faxing

There are also many improved features, such as the Fax Cover Editor, the user interface and phonebook importing With improved links to ACT! and Microsoft Outlook WinFax Pro 8.0 makes faxing from a computer easier than with previous versions. This is a real improvement and a good buy especially for the small and home office market.

WinFax Pro 8.0 by Symantec Corporation, requires Windows 95 or Windows NT (versions 3 51 or 4) and a Pentium (or Pentium-class) multimedia PC (We are interpreting "highly recommended" as "required" here but technically you could run the program on a 486SX/25 You could also eat spaghetti with a spoon)

You will need a faxmodem that is Class 1 Class 2, Class 2.0 or CAS-compatible A voice/faxmodem is needed and a sound card is recommended for TalkWorks

The CD-ROM installs the software and checks for your modem whereupon it takes personal data and registers through the modem An entry is made to your system files making the WinFax controller load when you start up your machine This allows the program to monitor your faxmodem for incoming calls even when WinFax proper isn't running.

The nice thing here is that even though the controller is running, other programs, such as your email program, are not blocked from using the port as has usually been the case with most fax reception systems. Also, having the WinFax controller load on startup means that faxing from within any program is a one step process

The CD-ROM installs a couple hundred fax templates but if you want to use your own the Cover Page Editor is an easy way to make one from scratch or take an existing fax and alter it Adding a logo or a graphic is straightforward and easy The program will spell check your cover page for you If you use your computer to send out multiple faxes you can do so easily

If you want, you can even set up two modems—one for outgoing and one for incoming or one for fax and one for voice mail This requires two telephone lines of course. Symantec has also improved SatisFAXtion support SatisFAXtion is the company's corporate fax solution that provides support for up to 1,000 users

Internet faxing is an interesting idea The idea is simple You send a fax and a list of names and numbers to a broadcast fax service. They have telephone access in most areas to avoid long distance charges the service faxes your fax and you pay the service

In Canada, this service is offered to WinFax users by Concord Network Services (http://www.concordfax.com) It charges 29 to 39 cents a minute, Canadian rates for each fax, with the usual minimums and sign-ups of course and returns a list of faxes successfully and unsuccessfully delivered. This can be a very good deal if you have a large volume of long distance faxes.

Broadcasting on your own is supported, and if you have your fax number already entered in a compatible organizer you will not have to bother with trying to import a text delimited file Symantec also enhanced integration with Microsoft Outlook and Lotus Organizer through phonebook support If you have one of these programs on your machine you will notice a new button on its toolbar This allows one button faxing to contacts without exiting your organizer

There is also Symantec's LiveUpdate technology Users click on the *LiveUpdate* menu to automatically update their software via modem or Internet connection.

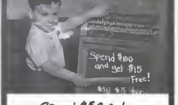
➤

Living with a faxmodem

Faxmodems are great for sending faxes. For receiving faxes in a home or home office environment they are not as good There are always little details that may make fax reception problematic.

For example, you will need to leave your computer on all the time (often companies fax in the middle of the night) As well even though faxmodems can distinguish between a fax and a non-fax call, they do this simply by listening for a fax tone It is sometimes difficult for a home user to setup the computer system so that calls are not, on occasion answered by the fax software when in fact, the line has been picked up on an extension.

This writer has used a single phone line for voice and fax reception for almost two years with numerous software and hardware solutions, short of a standalone fax machine. The system can work, but there are trade-offs It is also a good idea to remember that software which runs at all times to monitor something, such as a telephone line, is sometimes incompatible with other programs, e.g., netcasting or push style applications and/or system-monitoring utilities.—*Rod Lamirand*



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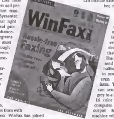
WinFax Pro 8.0 also has a new intelligent faxmodem driver that tries to detect problems that occur during transmission. This means the program will have better success at communicating with older fax machines.

WinFax Pro 8.0 has improved its user interface by making navigation easier with support for right clicking. Like most contact managers and personal information managers (PIMs) Symantec has realized that right clicking is a real productivity enhancement in programs where the user must travel through numerous screens to perform a function.



Another interface improvement is the drag-and-drop style of customization. Rather than setting toolbars, margins or views from within an option box, WinFax has joined the newest programs that simply allow the user to drag various components to change size, location or view.

Recurring and scheduled faxes are easy to set up, but now WinFax will regenerate attachments to recurring faxes. This means that any changes to an original document, say a newsletter, will automatically be made during the next occurrence of that fax. So, rather than having to go through the process of setting up another group fax, you would simply make changes to the original document and resend the mass fax.

If you are sending mass faxes, you might find the Send Confirmation feature useful. This feature provides a printed confirmation of transmissions as a paper record and can include date, time, fax number, number of pages and billing code.

WinFax has always generated the same old fax look that every other faxmodem has but now that is changing. The new UNIDRIVER send engine uses halftoning techniques to send grayscale and even limited color faxes. This means you can send 16 shades of grey to a fax machine and 16 color faxes to a fax computer. Of course the output from the fax machine will not usually be able to take advantage of the increased quality but if the receiving machine is a computer you can have better looking faxes.

One of the best features of this update is TalkWorks—a voice messaging system for use with voice modems. The system allows you to use one modem as both a fax receiver and an answering machine. TalkWorks can answer the line as a simple answering machine ("You've reached ABC please leave a message."), or as a voice mail system ("You've reached ABC. Press One for company information, Two to leave a message, Three for Fax On Demand options, or Four to hear our email address.").

Of course you can record your own greetings, but there are also dozens of prerecorded messages that are really very humorous. Remember, this feature is a function of your modem and will not work if you do not have a voice-enabled modem.

Other features of WinFax Pro 8.0 include improved and highly advanced auto-forwarding. You can have WinFax page you when you receive a fax, or even a certain fax (assuming you have Caller ID). The annotation layer allows you to use the mouse to write over the fax and then send it back. WinFax includes Xerox's TextBridge 3.0 optical character recognition (OCR) software to turn your fax into editable text, and other improvements.

The program is full of wizards to help with setting things up and the Help system is excellent. WinFax Pro 8.0 is an improvement on earlier versions and a powerful business and home system. This is the premier fax program on the market and a world leader in this technology. ❑

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Fax figures

With something like 60 million fax machines on the planet producing somewhere in the neighborhood of 336 billion fax pages a year, there are obviously a lot of people using fax technology. Email might be eating away a small portion of fax use but it is still the case that the fax machine is a standard business tool.

As of 1991, in North America, faxmodems have outsold standalone fax machines to a point where today approximately 80 percent of fax documents originate from inside a computer. Computer-generated faxes are of better quality than stand-alone-generated faxes because these machines generally use a low resolution 200x200 scanner.

Also, the sophisticated software found within computers improves the abilities of faxing. Almost every modem made in the last three years supports a binary protocol called BFT (binary file transfer) which allows two faxmodems to exchange the highest quality document—namely the original file. However, standalone machine manufacturers have not implemented the feature, due, in part, to the fact that stand-alone and faxmodem manufacturers are generally from two different business worlds.

New standards for fax color and higher resolution have been stalled in a standards committee for some time.—*Rod Lomirand*

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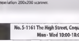

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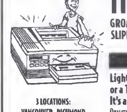

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All about MPEG

Making digital video with your PC

BY JEFF EVANS

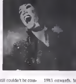
When I first saw the Mac in 1984, I had two questions: where's the color, and can you do video and animation with this thing? You see, in my innocence, I had simply assumed that when I was staring at a computer screen, I was staring at a kind of television monitor, so why couldn't I do television on a personal computer?

PART I: A brief MPEG history

Why you couldn't do television on a personal computer

It's a matter of frequencies, for one thing. Television in North America conforms to the NTSC (North American Television Standards Committee) format of a 15.75 KHz frequency interlaced display. This is the frequency of the signal that's displayed on your home TV set.

Ironically, when people began hanging video monitors onto computers in the late 1950s, they used, of necessity, TV-frequency monitors, because that was the only sort of video monitor being produced back then. The early personal computers produced an NTSC frequency signal. In fact, one of the first Apple I monitors was basically a TV set with an Apple logo stuck on it.



However, the early PCs had very primitive graphics: they were either monochrome like the early Mac or greyscale or had only a handful of colors in their palette. Also, there was no cheap way to feed a TV signal into a computer and mix it with computer-generated text and graphics, so in practice personal computer graphics and TV signals still couldn't be combined on a computer.

A TV style display was very hard on early computer users' eyes: the composite video signal of TV causes a very tiring horizontal flicker, as the video signal jumps from one scan line to another about 30 times each second. This makes small text hard to read, and causes horizontal lines to shimmer.

Users got eyestrain and headaches from prolonged use of interlaced NTSC displays. Since the main need of computer users performing applications like word processing was for a stable clear "paper like" non-interlaced display, the computer industry evolved away from NTSC video towards a high frequency (60-120 Hz) digital graphics card and monitor standard.

TV and the PC diverged from about 1983 onwards. Mixing television and computers was pretty much forgotten as a main stream option for the average PC owner. Only very specialized, high priced Mac or PC cards, such as the Targa or Radius video cards, or the very innovative but badly managed Amiga computer, were available to keep a connection between computers and television.

Why would you want to do video on a PC, anyway?

By the early '90s, for those who wanted to create, store and play back digital video from the hard drive of a Windows computer (with all the opportunities for interactive multimedia that implied), there was primitive digital video technology available, but at great cost and difficulty. Compared to consumer video with its cheap camcorders and videotape, doing computer video was a huge challenge.

For one thing, video data on a computer is stored in digital format on an expensive hard drive or other mass storage medium, rather than in analog format on a $5 videotape cassette. One second (about 30 frames) of uncompressed full-screen VGA resolution (640x480 pixels) video imagery at full 24 bit (photorealistic) color could take up as much as 30 MB of storage space. An hour of such digital video would require over 100 GB of storage space.

Loading those pictures from a hard drive into RAM and then "flipping" them at about 30 frames per second (fps), with properly synchronized audio, using regular graphics and sound cards, was an impossible burden for a PC or Mac of the time. So, even when cheap

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video digitizing cards, and faster processors, cheaper RAM and larger hard drives began to make digital video a tantalizing possibility, it was still a burden to attempt digital video creation or playback.

The early digital video demos that we all saw on PCs were limited until recently to tiny postage stamp screen sizes, blurry, jerky playback and badly synchronized audio. Digital video was vastly inferior to commercial VHS tape or cable TV, so it languished as a novelty item, not a practical and desirable mass medium.

A horde of "standards"

Nevertheless, the tantalizing dream of "TV on the PC" stimulated a decade long quest for a really useful digital video solution. In much the same way as file formats for still images proliferated to include TIF, IFF GIF, BMP JPEG and many others—all with their defenders and critics—so digital video formats popped up: Anim5 and CDFX on the Amiga, and Motion JPEG, QuickTime, AVI, INDEO, RealVideo, VIVO and VDOLive for the PC and Mac. All of these formats met a need, but they all had huge drawbacks in quality compared to the consumer VHS standard.

There were a few digital video solutions that achieved a measure of success. The undeniable leader was the Video Toaster on the Amiga, an analog-to-digital-and-back-to-analog video and animation system that sold over 60,000 systems and established desktop video as a real market. The originally Mac-based Avid non-linear editing system also found a smaller but respectable professional video audience. Adobe's Premiere video editing program, Macromedia Director, and other programs for sequencing and editing digital video and animation files all achieved a measure of success as well. However, none of these early solutions crossed the threshold of low-cost, consumer video quality and ease of use to become a true mass market technology.

MPEG 1 and MPEG 2

An industry advisory committee, the Motion Picture Experts Group (MPEG), was established in the late 1980s to develop a true, industry wide standard for computer-based digital video.

Its first release, the MPEG 1 format, used clever image compression algorithms to reduce the file size of digital video streams down to a fraction of a traditional digitized image file size. The compressed, "encoded" video has to be decompressed and displayed in a continuous stream on a monitor.

Early hardware and software developers began in the early '90s to create products to digitize video and convert it to MPEG 1 format. Developers also created MPEG playback hardware and software to allow MPEG 1 files to be played on personal computers or multimedia player consoles.

At the 1992 Comdex show, the first consumer MPEG 1 playback products were shown. Bundled with a fast (for the time) CD-ROM drive and a special MPEG 1 decompression card, the first MPEG bundles cost over $1,000.

The Reel Magic MPEG 1 bundle created the first real excitement in the MPEG market in 1993. Even with MPEG compression, only about 16 minutes of 704x480 pixel, 30 fps, true color MPEG video could have been stored on a CD-ROM.

By going to a lower 352x240 resolution (comparable to the resolution of regular VHS tape) about 65 minutes of top quality video could fit on a disc. By decreasing the color depth (fewer colors in the palette) or increasing the degree of compression (so individual frames were blurrier) or going still lower in pixel resolution or frame rate, it was possible to store up to several hours of video on a CD-ROM.

However, early MPEG vendors discovered that the more the video image quality was compromised compared to the VHS tape quality standard, the fewer the PC users who were interested in going to the expense and trouble of using MPEG.

The PC catches up

By 1995-1996, however, the general progress of the PC and developments in MPEG hardware changed the picture of the fairly dismal and limited MPEG market.

For one thing, the cost of MPEG capture hardware declined from tens of thousands of dollars to the $1,000 to $3,000 range, allowing more interesting MPEG content to be created at a low "cost of entry." Inexpensive graphics cards with hardware support for MPEG decompression and playback began to appear from firms such as Matrox and ATI, allowing much simpler, higher quality and cheaper MPEG 1 playback.

Even PCs without a custom MPEG 1 playback card gained the ability to play back MPEG 1 files using MPEG 1 player software and the raw muscle of the new, fast Pentium and PowerPC chips (though, to be honest, software-only MPEG 1 playback often has limitations in terms of being able to handle smooth, full-frame-rate, full-screen movies).

In the last year and a half, several new real-time MPEG 1 creation cards have and appeared on the market brought MPEG 1 into the price range of virtually any computer professional or serious enthusiast.

The virtues of MPEG

MPEG 1 is capable of video image quality that, at its best, resembles a good VHS tape or cable-TV feed. Typically it maxes out its resolution at 352x240 pixels. Maximum frame rate is about 30 fps, the same as TV.

A top-quality MPEG video sequence can fit about one minute of video and synchronized audio into 10 MB of storage space. MPEG 1's main advantage is its high compression ratio: up to 200:1 over uncompressed video frame grabs. Its main drawbacks, though, are that it can't beat the quality of good laser disc or S-VHS video, and it is somewhat tricky and expensive to edit MPEG 1 sequences and include them as part of a sophisticated interactive multimedia program.

Part II: MPEG gear

We had the chance to test three of the most current MPEG encoding cards for Windows: the Vitec Multimedia RTS real time MPEG-1 Encoder/Decoder, Darim Co. Ltd.'s MPEGator, and Data Translation Inc.'s Broadway card. Here's what we found.

Vitec Multimedia RTS

Billed as a "Real Time MPEG 1 Encoder/Decoder," the RTS is a half-length PCI card that comes with an S-video adapter, a software CD-ROM and minimal but adequate installation documentation (there is a more comprehensive user's guide on the disc, in Adobe Acrobat and MS Word formats). The card has a composite video input, and an audio input ➤

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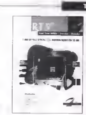

We installed the card on a Pentium 133, with 16 MB RAM and a 1.5 GB EIDE drive with a Matrox graphics card with 2 MB of video RAM, running Windows 95. As it turns out, this is the absolute minimum configuration that you can try to run the RTS card with. It worked well, but performance would be even better on a more powerful system.

When the RTS card is inserted into a PCI slot and the system is turned on, Windows 95 Plug and Play detects the new hardware and displays a "New Peripheral Device Detected" dialog box.

Following the system prompts, we loaded the RTS driver, MICAPCI.INF, from the RTS CD-ROM, and then ran the Setup program, following the prompts as the setup progressed. When setup was finished, an RTS program group was created on our hard drive.

For best quality playback of digital video sequences, a set of Microsoft DirectDraw drivers is included in a DirectX directory on the RTS CD-ROM, and we installed this on our PC.

When we restarted the PC after installation of the RTS was complete, we loaded the MCI driver to initialize the hardware. With the RTS software running, we entered a file name for the video sequence we were about to capture, and specified the video source (in our first test, a live feed from an S-VHS camcorder) and the data rate (the RTS will handle up to 3 MB/sec. We clicked on the "Start" button with our mouse, waved at the camera which we had pointed at ourselves, and then pressed the stop button.

The RTS captured a 14-second sequence at 352x240 pixels, which had a file size of about 2.6 MB. This was actually pretty impressive compression: 14 seconds at about 30 fps represents nearly 420 frames of digital video, or a little over 40KB per frame in compressed MPEG 1 format. To play back an MPEG 1 file, the images have to be decompressed on the fly and shown in sequence on the computer monitor screen.

When we played the sequence back, from close examination (about 10 inches from the monitor), pixels were quite evident. From three feet away, the quality looked very similar to a good cable-TV feed or VHS tape. We tried digitizing samples from a couple of other video sources (a consumer VCR with a rented tape, and feed from a cable converter), and the results were substantially inferior.

The RTS comes with an MPEG Toolbox, a set of software utilities for manipulating and playing back image and video files. The VIDEO Clip MPEG program allows you to do simple cutting, pasting, and copying of MPEG 1 files. The MPEG MAKER utility allows you to convert WAV files, AVI movies, or sequences of still images to MPEG 1 format. The MPEG PLAYER is a decompression/playback utility. The MS ACTIVE MOVIE is an MPEG 1 decompression utility that gives top-quality MPEG 1 playback on Windows 95.

The base RTS unit is a very well-engineered, satisfying product with all the necessary software to get started. In particular, it does a good job of capturing audio in sync with the video. For long sequences, a very fast hard drive and more RAM would be a good idea.

A more fully featured version of the RTS package is the MPEG Cut-Machine, a turnkey solution for Video CD producers. In addition to the RTS and its MPEG 1 encoding software, this professional-level version includes the Video Clip MPEG program, a much more flexible and fully featured image and sound editing package. It also has an Image-In Compact, for image retouching, and VideoPack, a Video CD interactive authoring program. This last product is absolutely essential for anyone who wishes to efficiently author a professional level Interactive MPEG 1 CD-ROM.

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The base level Vitec RTS costs $1 157, while the professional-level version which is the same hardware plus the MPEG Cut Machine Video CD authoring and publishing component costs $1 899

The Darim MPEGator

This product includes a somewhat larger PCI card a manual software diskettes and a variety of audio and video cables The base system requirements are similar to those for the RTS

Installation was similar to the RTS Windows 95 Plug and Play made the process much easier than for previous generations of video digitizers we have tried One point on installation we had to ensure that there was no contact between the MPEGator card and any other parts of the computer (this can happen if the heat sink fan is positioned next to some other bulky PCI card)

The MPEGator has both composite and S-video inputs, as well as audio One oddity of the card is the sizable heat sink-fan unit mounted on the board. It must work since there were no obvious signs of overheating

We loaded the low- and medium-level driver software and the capture/playback program (the complete software installation took up about 12 MB of hard drive space and included MS Active Movie, plus MPEGator filters for editable MPEG capture MS Direct X playback for high-quality preview, and the MPEGator Software Development Kit) The MPEG video and audio compression drivers will also permit users to convert existing animation or video files into MPEG format (for example they convert AVI to MPEG)

Capturing an MPEG sequence was simple and similar to using the RTS We assigned a file name for the video to be captured and specified a file format (either MPEG or so-called "editable MPEG," an AVI format that allows the video to be edited in a variety of AVI-compatible video editing programs), and then re-compressed into MPEG format Again, we used an S-VHS camera as a source

The MPEGator software allows the user to manipulate the properties of the capture (bit rate, image size video and audio quality) quite flexibly There is an Advanced Properties option that has to be approached with care—it will allow variations in the data compression that may make the resulting MPEG file enhanced for some applications but incompatible with others (i e it won't run) The advanced options should be avoided if you are a novice.

The quality of the MPEGator's output, depending on the capture rate specified was almost as good as the RTS The Darim MPEGator's price is $1 899

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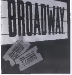

The Broadway card from Data Translation Inc was one of the first really usable, low-cost

Continued on page 106

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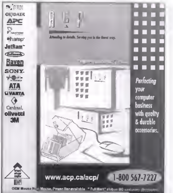
Shopping experience missing from e-commerce

BY GEOF WHEELWRIGHT

What would you be prepared to buy online? That's the huge question facing the world's retailers as they struggle to find out—through a massive, global "trial and error" experiment—exactly what goods and services customers are prepared to accept via orders placed on the World Wide Web.

There are two very different kinds of purchases that can be made online, and each represents a different kind of buyer. The first kind of purchase simply uses the Web and Internet-based electronic mail as a replacement for old-fashioned catalog shopping. This kind of purchase has much more in common with television's Home Shopping Channel and the hundreds of telephone-based catalog shopping operations around the world than it does with true "electronic commerce.'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Quite often, the only electronic component to this kind of purchase lies in the finding of the goods you want to buy on a Web catalog page. You then send your order for those goods via email or even by conventional telephone using a phone number advertised on the Web page. In such a scenario, goods are typically delivered via a courier service.

Technologically, there really isn't much that's clever about this kind of "Web-based shopping," except that it saves the retailer the cost of producing, printing and mailing a catalog.

In the case of orders that are accepted via email (or submitted directly to the supplier from the Web site via a commerce database), there is a further saving for the retailer on the cost of staff that would typically be needed for a telesales operation.

This could produce lower prices and therefore a moderately compelling reason for people to consider buying goods sold in such a way. It is likely, however, that only commodity goods that do not have a big "touch and feel" quality associated with their purchase (such as, perhaps, paper clips, photocopying paper and other basic supplies) would be successful through this method.

In addition to all these considerations, there are also a number of "human intangibles" that play a role in the success of such online sales (although they are little different from those at work in the cases of catalog shopping or TV shopping). It may well be that you like the sound of your paper clip supplier's voice, or that a trip out to the local office equipment supplier for a box of printer paper brightens up an otherwise dreary day.

These considerations have little to do with logic or efficiency, but they are real human traits and are ignored by online retailers at their peril. Some software companies have suggested that part of this problem can be addressed by offering one-way Web-based videoconferencing so that you can see and hear the people you are buying from.

But the current typically low Web access speeds will likely mean that this kind of service is still a few years off—and may still not adequately meet the concerns of those who treasure the intangibles of their "live" shopping experience.

To many, it will probably be like the difference between television and an evening out at the movies. When television was first introduced, movie house attendance dropped dramatically and many speculated that cinemas could soon become extinct as movie-goers stayed at home instead.

Cinemas survived, however, and began to thrive when they realized what it was about the cinema experience that was unique. Going to the movies with friends was an evening out and showed you films in a way that you would never be able to experience at home—on a wide screen, with enhanced in-theatre sound and with hundreds of other people.

As a result, greater investment has been made in cinemas, new types of cinema snack foods have been introduced, cinemas are more comfortable and a lot of effort has gone into "adding value" to the experience. The same is likely to happen in those retail areas where people find it comfortable to shop over the Internet.

The biggest potential for growth in Internet shopping, however, lies in goods that can be ordered, paid for, processed and delivered digitally. These include computer software, magazines, newspapers, movies, music and specialized video programming.

Using modern computers and high-speed modems, many of these items are already available for free as Internet "samples" of the real-world product (e.g., short movie clips, sound files containing a few bars of a popular song, and abbreviated online versions of many popular publications).

The biggest push, of course, comes from software vendors, who can deliver their product completely over the Internet (provided customers are confident in using whatever online commerce system the software vendor has selected for payment of the product).

At the moment, the system is largely being proved by software products that are offered for free (such as the trial versions of the Navigator Web browser offered by Netscape and the free Internet Explorer browser offered by Microsoft). However, many vendors are just starting to move into the area of selling software via the Web.

All of this will only be successful, however, if you are happy to buy via the Internet. And that will probably depend a great deal on how confident you are in its security. Most experts suggest that the Internet is certainly no less secure a place for giving out your credit card details than the abundance of toll-free telesales operations (where you know as little about the person taking down your details over the phone as you do about the people who might process your order over the Internet). One thing is certain: as more people try Internet shopping, it will continue to grow. ❑

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All about MPEG

Continued from page **103**

MPEG encoder cards to hit the market It won a great deal of praise and many PC industry awards when it first appeared.

Broadway is a PCI card with a C-cube chipset, and it has both VHS and S-VHS input, and output (but no onboard audio capture: it utilizes the PC's sound card) It offers real-time capture capability, and supports capture to AVI format video (editable MPEG 1) and compression to true MPEG 1 It requires a similar PC system configuration to the other two cards we tested (minimum 75 MHz Pentium)

We had more troubles with the Broadway card than with either of the others apparently because the first computers we tried to install it in had non-standard motherboards. It simply would not install properly on the first two PCs. Upon investigating the documentation further, we discovered the Broadway will only work with certain motherboards. It may well be that the other cards also have compatibility issues, and we were simply lucky enough to have started with a compatible PC.

Upon locating a PC with a recommended motherboard type we installed a Broadwey card into a PCI slot loaded the software and easily captured a test sequence The maximum capture sampling rate of the Broadway was slower than that of the other two cards. and the quality appeared slightly inferior but it was still quite good For the MPEG samples I encoded audio sync for the two other cards was generally accurate, though the longest sample was about five minutes

For longer MPEG samples there are often audio syncing problems (the best test of this is to play back a video sequence of someone speaking—if there is going to be any sync problem, it's most obvious when lips are moving out of sync with the speech like a badly dubbed foreign film) The user interface on the capture software and the suite of supplied software were very good. The Broadway card with a suggested retail price of approximately US$1 000 is a solid product and deserves its good reputation as a pioneer in the field

An entry level "lite" version of Broadway has been announced for US$499 and this product would definitely be a contender for the consumer PC user's attention.

Summary

RT 5 This card had the highest sampling rate (up to 3 Mbps encoding) and produced the best quality of MPEG in our tests Its realtime preview was very useful, and audio syncing was very good all at a very low price The Cut Machine version with a package of interactive authoring and CD publishing software is a good entry level solution for would be MPEG software publishers

Darim MPEGator The sampling rate was a bit lower than the RT 5 but still resulted in good quality encoding it has good ease-of use and the presence of both composite and S-VHS inputs is a nice feature

Broadway Same speed encoding as the MPEGator, very slick documentation and software but no real time preview while encoding

Buyer beware

One fact stood out in our investigation of these products. If you are considering getting into MPEG 1 capture, you should deal with an experienced dealer or value-added reseller (VAR) who is capable of selling and supporting complete solutions, not just moving boxes off shelves Don't buy any product unless you have first tested its compatibility with the PC you're going to use it on

Also the "garbage-in, garbage-out" principle applies very forcibly to digital video If you attempt to digitize from low-quality, dubbed VHS tapes or broadcast TV or cable feeds your results will be disappointing, no matter what encoder hardware you use Try to confine your video sources to first-generation high-quality S-VHS tapes, live camera feeds or laser disc output

And remember, that "minimum PC system configuration" means just that, the absolute minimum If you want to do digital video you should give yourself as much of a speed and quality edge as you can with the most RAM fastest hard drive, highest capacity removable mass storage (such as a Fujitsu magneto optical drive, SyQuest removable drive or Iomega Jaz drive) best graphics card and fastest CPU you can afford The higher the sampling rate your computer can support, the better

The future of MPEG MPEG 1

The MPEG 1 cards we tried are all eminently usable products, capable of creating good quality, compact digital video footage for distribution via CD ROM local networks, or the Internet However, they all are limited by the MPEG 1 format.

At best, the video is only about as good as consumer VHS and as soon as one tries to compress the file sizes further by degrading the sampling rate or reducing resolution, for example so they'll be playable on older, slower PCs without special MPEG playback cards, or over the Internet, then even MPEG 1 begins to look like all the other chunky low quality computer video formats

MPEG 2, DVD and videotape?

There are two ways to go for higher quality PC video For digital video playback on a PC, MPEG 2 is the future. This is a much higher quality version of MPEG, which needs special MPEG 2 decompression hardware for playback.

The latest Reel Magic and ATI Xpert@Work and Xpert@Play cards all do a good job with MPEG 2 decompression. And to store the huge files that MPEG 2 involves, the latest high-capacity DVD discs are a must. The capacity of DVD discs, which range from 4 6 to 14 GB will hold a full two hours of extremely high-quality video far superior in resolution to the VHS consumer standard. However, MPEG 1 will still have at least a couple of years of usefulness before MPEG 2 replaces it

For one thing, there are no low-cost MPEG 2 encoder cards on the market. MPEG 2 products are available from vendors such as OptiBase Optivision, Future Tel MicroVitec and IBM but the cards and software cost over US$25,000—somewhat beyond the budget of the average PC user.

Another limiting factor is that virtually no PCs currently have MPEG 2 decoder or DVD disc playing capability Also MPEG 2 files are a good deal larger than MPEG 1 files, and will

Continued on page **108**

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A virtual journey under the Earth's crust

BY ROSS MACDONALD

Product: Virtual Reality Earth Quest
From: Dorling Kindersley (distributed in Canada by General Publishing)
Dual format CD supports both Windows and Macintosh
Estimated street price: $36.95

Virtual Reality Earth Quest is yet another imaginative title from the Dorling Kindersley fun box that combines a bit of challenge and a bit of fun with a whole lotta' learnin' on a single disc.

In this case the topic is, as you might suspect from the title, our planet. And the method, as you might suspect with any DK experience, is gradual exploration by game-like means.

And by that I mean it's necessary to spend a lot of time with most DK discs in order to detect all they have to offer. In this case, the interface involves wending through tunnels to individual "stations" that offer maps, globes, pictures, animations, videos and, of course, text, to explain just about all aspects of terra firma—from the life histories of individual rocks and minerals to volcanism and even different mining techniques.

Fortunately, to help us along, there's a navigator function always visible at the top right of the screen so you can both find your way around and find your way back to where you were in case you're forced to leave the program at any time.

As you work your way through Earth Quest you're given the opportunity to build your own volcanoes and create your own earthquakes, dictating all— from lava flow rates to seismographic intensity—using a whatever-you-wanna-do control panel. What fun!

The results of exercising this deific control are somewhat disap-

➤

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pointing, however, in that all your specifications are enacted at your behest but only in frame-by-frame animation with a bit of narration. Still the principles involved are clearly demonstrated and there's a myriad of variations on each theme to construct and deploy

According to the box (I didn't play with all of them), there are 30 of these interactive consoles peppered throughout the disc along with "40 000 words of text 600 images, 50 animations [and] 13 videos..." which if you take the time to go through them will collectively educate you on the basics of all the forces and resources operational in Mama Earth

But wait! There's more! As an added bonus they've also thrown in a copy of a nice little field guide to rocks and minerals along with a free trial subscription to DK's Science On-Line (secret password required shhhhhhhh)

Like just about all DK products these days, you don't have to be particularly interested in the topic addressed to enjoy actually owning—and using—each disc. Their prices have drastically dropped of late (from $125-plus each in 1995 to for the most part less than $50 now) to the point where it's quite reasonable to consider chasing after the entire catalogue of about 20 titles. Highly recommended ❑

Contact: Dorling Kindersley dist. in Canada by General Publishing 30 Lesmill Rd Don Mills ON M3B 2T6 Tel. 416-445-3333.
Web site http://www.dk.com

All about MPEG

Continued from page 106

not be very usable over regular speed networks or the Internet until higher bandwidth pipes are commonplace.

DVD-compatible drives will probably become common before any other part of the MPEG 2 pie, since the CD-ROM drive makers are expecting to switch production over to DVD in the next year. By contrast, as the cards reviewed above indicate, MPEG 1 is a well-developed video format with complete hardware/software solutions at hand.

Finally, any digital video enthusiast should remember that although MPEG is probably the best format for digital video that is going to be played back on a personal computer there is a whole other area of computer-based video that is designed to create "traditional" videotape as the final product

To be a true digital video producer you will need to be expert in both the analog and digital worlds. Either way though the PC is increasingly the production platform of choice for professionals and consumers in the video world. ❑

Special thanks to Bernard Yip of BenClare Multimedia Inc (Email bernclar@direct.ca or Tel 416-490-6516) for his help and extensive MPEG and video expertise in the preparation of this article.

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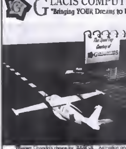

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What's playing?

Cleared for take-off

BY GORDON GOBLE

Looking for a little vacation excitement this summer? Why not forget that boring jumbo jet and hire yourself out a real aircraft—one that'll have you not just flying the skies, but ruling them. Better yet, save the hundreds of thousands of dollars it'd cost to audition one of these things and fly one yourself on your PC that is.

This month we'll look at Novalogic's Comanche 3 and Interactive Magic's iF-16 a pair of fighting flight sims that are sure to keep any desktop jet jock flying high.

Comanche 3

From Novalogic

System requirements: Fast Pentium VGA or better video 16 MB RAM 16 MB hard drive space 2x CD-ROM drive DOS 5.0 or Windows 95 Sound Blaster or 100 percent compatible sound cards.

Street price $60

NovaLogic's helicopter combat game Comanche Maximum Overkill (circa 1992) was universally hailed as having one of the most spectacular environments ever created for an aircraft simulation Its world was rich colorful and textured—short on traditional polygons and filled instead with natural-looking terrain textures and color blending Unfortunately, missions were few, flight modeling was more fantasy than reality, and serious challenges were few and far between A completely fulfilling experience it was not.

Now in 1997, NovaLogic is back with its third installment of the series, Comanche 3, and it's obvious from the first look that the graphics department hasn't been sleeping for the past five years. Even more critically there's an eminently playable game behind the fluff. You see, "simulation" isn't a misnomer for C3, so if you're thinking about jumping in and blasting away, you'd best think again.

Comanche 3 is all about altitudes and collectives, proper preparation and the stealthy approach intrinsic to flying this Boeing-Sikorsky prototype With 32 exciting and target rich global missions that tax both your and its abilities to the fullest, you'll need not only wits and a battlefield full of experience, but a programmable multi-button joystick or a mastery of the keyboard to control what is a very complex craft Thankfully, NovaLogic has supplied a lovely step-by step tutorial, complete with instructor and even an "easy" flight model to aid the cause

But let us not forget the visuals C3 is markedly more detailed than the first two in the series with a dynamic use of color that lets you tell friend from foe, innocent farm from enemy encampment, and slow-moving tank from slow-moving tractor All the while giving you a better visual perspective from which to judge your current altitude—critical in the low-flying situations associated with heli-sims

If you tire of the default first person cockpit perspective, there's no shortage of extraneous views including left side right side rear fly-by spin cams, and an assortment of target and missile cams When you do get back in the pilot's seat you'll find a pair of multi-function displays radar a comprehensive pull-down menu system, and of course, the HUD (heads-up display) consisting of all the information a good sim pilot requires.

Through stark desert, snow-capped peaks and steaming jungles, Comanche 3 delivers the goods, and must be considered one of the top helicopter simulations of all time

iF-16

From Interactive Magic

System requirements Pentium 100 (Pentium 166 recommended) 16 MB RAM 100 MB hard disk space 4x CD-ROM drive, DOS 5.0 or higher/Windows 95 SVGA graphics SoundBlaster or compatible sound card

Projected street price $60

Okay okay, so this one isn't out yet but if you're looking for a head's up on what is shaping up to be one of the finest simulations ever of the F-16 Fighting Falcon (or any modern warplane for that matter), you've come to the right place.

Although distributed by Interactive Magic this little beauty's been designed by Digital Integration, the same people who pumped out the superb helicopter sims Apache and Hind. I had the pleasure of taking the pre-release copy for a little spin Did I like it? Does Dennis Rodman like publicity?

Whether bright-eyed rookie or hardened veteran, iF-16 has the tools to please. If my beta is to be believed, there'll be enough equipment, weapons, missions and authentic flight modeling to keep even the most fervent jet jock satisfied, while newcomers needn't even crack the manual to get airborne and commence firing in an optional "arcade" mode Let's check the basics and see where the game will take you

iF-16 slaps you into an F-16 cockpit for a first-person perspective of life in the not-so-friendly skies. For anyone schooled in ➤

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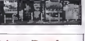

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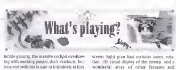

What's playing?

arcade gaming, the massive cockpit overflowing with working gauges, dials readouts buttons and switches is sure to intimidate at first but thats life at the controls of a full blown simulation Fortunately, the game has been equipped with several pilot "aids" that should make indoctrination a bit smoother

From an unassuming and decidedly streamlined main menu players will choose from one of three flight modes Training Quickstart, and Combat Training is just that, a sequence of 20 usually non threatening scenarios that teach the basics of what is still arguably the world's premier multitasking fighter From take-offs and landings through to specific weapon deployment and general operation this is a great spot for beginners to get a feel of the stick

Quickstart, meanwhile, has been designed primarily for newbies and anyone who simply wants to get in and tear up the skies The action begins in mid-air with options for unlimited weapons and even invincibility—perfect for a quick fix of airborne action

The veteran sim pilot however, should turn directly to Combat where he or she will have full access to all that iF-16 can offer, beginning with a choice of three available theatres Israel, Cyprus or Korea. Fictitious yet plausible scenarios have been devised in all three, explored through full campaigns of 20 missions each or independent single assignments

Regardless pre-flight preparation includes a text/verbal briefing, followed by a full-screen flight plan that includes zoom, rotation 3D visual display of the terrain and a wonderful array of other features and advanced but authentic weaponry Everything including payload and waypoint particulars can be modified through point and click interfaces

In the air and with all graphic options cranked iF-16 is very believable and darn pretty I can toss around buzzwords and standards like Goraud Shading and 800x600 resolution but suffice it to say that polygons are splendidly covered up and textured, clouds are more than just a series of lines in the sky and lighting is gorgeous Oh yes, enemy forces are incredibly varied running the gamut from light infantry and armored ground vehicles to helicopters and battleships and all things between.

iF-16 permits two player head-to-head or cooperative matches over a modem, direct serial cable or across a network, and 16-player network melees, including a fight to the finish called Death Match Add in some knockout cut scenes a moody music track, and a Visual Preferences screen that actually lets you look at a typical game scene while making adjustments and iF-16 looks to be one compelling package Expect it early this fall ❑

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David Hathaway's top 10 Canadian music Web sites

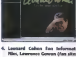
Having spent almost three years compiling Canadian music Web sites for the "Mars Subway Canadian Music Home Page" (http://www menkey-boy.com/cmusic/index.shtml), David Hatheway has seen more than a few music sites. His Web page attempts to list any and all Web resources and band pages that involve Canadian music and their presence on the Internet

David spent many years playing in bands in Canada (occupation. loud guitar, Roots Roundup) and now works at an Internet email systems specialist with The Electric Mail Company (http://www electric.net) The list below represents some of the favorite music-related sites thet he ran across while compiling his site, presented in no particular order.—*Keith Schengili-Roberts*

1. **My Brilliant Beast (band site):** This is probably one of the most consistently good looking sites done for a band I have ever seen The site changes frequently and is always a treat
   http://www randommedia com/beast/

2. **Caught in The Web (Web design company)** • These people are designers of some very high profile sites for Canadian musicians and companies. This site always seems to incorporate some state-of-the-art HTML, making it an excellent learning tool for building designers
   http://www citw.com/

3. **World Records Search Engine** • Although not specifically linked to Canadian music this is an excellent, well-designed music search engine site
   http://www worldrecords.com/



4. **Leonard Cohen Fan Information Files, Lawrence Gowan (fan sites)** • Fan sites make up a large portion of the sites listed within my site. Any fan who will go to the effort of writing a site for their favorite artist shows true enthusiasm, and merits mention. These two sites are two of my favorites and I'm not a big fan of Leonard Cohen (apologies to Cohen fans).
   http://nebula.simplenet.com/cohen/
   http://www.cadvision.com/Home_Pages/accounts/haiemi/gowan.htm
5. **The Tragically Hip (band site)** • The Tragically Hip was one of the first bands to enter onto the Web with their own site, and it remains as one of the nicest sites that a band actually contributes to
   http://www.thehip.com/thehip htm
6. **Addicted To Noise (general music)** • Not a Canadian site but it's the site I go to the most for up-to-date information on bands around the world. Their "supercasts"—live concert webcasts—are often even listenable on a 28.8Kbps modem.
   http://www.addict.com/
7. **Giglink (show information)** • Published by one of the original authors of Euphony, one of the first Canadian Web e-zines online, and now sadly departed. It's a great site to find out who is playing where in Canada.
   http://jazz.sidenet.com/giglink/
8. **The Downward Node (fan site)** • Another fan site that has been around for a long time, and continues to evolve and grow This particular site provides a very complete look at the band The Pursuit Of Happiness.
   http://www2.susite.sfu ca/jot/tpoh/

9. **EMI Music Canada (record label)** • Most of the Canadian record companies now have sites, and I'd rank this as one of the "better looking" of the bunch
   http://www.emimusic.ca/

10. **The Tea Party (band site)** • A pretty black site by a pretty dark band. The site also appears to have some band involvement, which I like to see in a site.
    http://www.teaparty.com/

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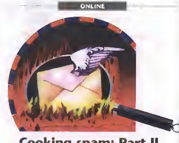

Cooking spam: Part II

More recipes for dealing with junk email

BY KEITH SCHENGILI-ROBERTS

Would you trust a spammer to keep his word?

As a "courtesy" some spam emailers include a notice within the body of the email message offering to remove you from their list. But here's the dilemma: would you trust somebody whose job it is to get the most coverage to actually remove you from their email list? Considering the techniques that many spammers use to acquire email addresses, many of them are out of date and so out of a large emailing list of hundreds of thousands of email addresses only a fraction of them are likely to be valid.

Why is this? Consider the following: at institutions such as universities, students are often given a free account. At the end of the term, these accounts are terminated. Multiply the number of these accounts by the number of universities in North America, then add those to the accounts at universities around the wired world, and you get a glimpse into how many invalid accounts are out there. Don't forget to add the corporations that decide to switch to new domain names, people who leave for other jobs and whose email accounts are terminated at their original job, and the people who simply decide to go with a different Internet service provider (ISP). Even worse for the spammer many of these accounts may still be active but no one uses them anymore, so the email piles up unread.

As a result, many of the lists the spammer gets contain plenty of invalid addresses. Most of the invalid email addresses will simply bounce back to the spammer, saying that the email address no longer exists. But for those that are not rejected, the spammer still cannot be sure that the email they send will be read. The only way they will know if an email address is valid is if the email is responded to in some way. Therefore it is usually considered a bad idea to respond to a spam email directly in any way, because you are just confirming that the email address they sent their spam to is still valid.

Worse, by sending a remove request or a nastily worded response, you could be putting yourself on a fresh email list. For a long time there have been rumors that "remove" requests didn't work, and instead simply added you to a more valuable list of qualified valid email addresses. One person recently decided to put this theory to the test. In the "Spamford Experiment" a user set up a brand new email address. It had never been used and there was no registry or Web link to it anywhere else on the system, so there was no possible way any spammer could have gotten the address from anywhere. A single email was sent from this address, a remove request from a prominent email spammer. Within five minutes, the email account received its first spam from that same email spammer. Assuming of course that you are not sucked in by the pyramid scheme or whatever else a spammer is trying to push on you, once you have received an email spam, your best bet is not to respond to it directly.

What can you do about spam?

Increasingly, there are calls by some people in the online community to initiate laws that would stop spammers, or at least make them more accountable. In the United States, there is a group that is looking to add an amendment to the existing law that makes junk-faxers more accountable. A similar law was set up a couple of years ago in Canada to deal with people sending junk faxes, and there have been rumblings by a few people here to extend the existing law to the realm of Canadian email spam as well. But is legislation the way to go?

Electronic Frontier Canada (EFC), an organization devoted to upholding freedom-of-speech rights in cyberspace, recognizes that spam is a problem in Canada. The EFC's take on legislation is that "anti-spam laws would be ineffective at catching the real troublemakers who often forge email headers and are therefore difficult to locate." They also note that in contrast "junk-fax laws are effective because it is easy to determine the telephone number of the originating fax machine."

As an alternative to new laws to deal with spam, (and the possibility of encroaching

Continued on page 116

Tools for creating on the Web

Part I: HTML aditors

BY LINDA RICHARDS

Everyone is making Web pages. People's cats, dogs and horses have Web pages. My parrot Fred has a Web page. People have Web pages to sell products and share their interests with the world. Web pages are everywhere.

One of the things that's so compelling about making Web pages is that they're just so darned fun and easy to do. Sure, some Web sites are more complicated than others, and some elements of even simple sites can be difficult. They're bound to be, otherwise there wouldn't be so many scores of people lining up to produce sites. So at the top end where the futures of companies seem to ride on the elegance of their Web site, you're better served investing your time into what you do best and hiring a Web designer.

But, if what you're after in building a Web site is more about fun and less about profit, maybe you've come to the right place after all.

You need some tools

You've heard it before: you can't do the job without tools. Building a Web site isn't that different from any other type of construction job except, of course, you're less likely to get splinters. Although a basic Web site can be built with only a text editor, to create and maintain a reasonably professional product you'll need four categories of tools:

1. an HTML editor to build the code of your Web site,
2. an image editor to help you make or convert cool graphics into an appropriate Web format,
3. you might want some type of Web site management tools to help keep your site under control and in sight,
4. and the extra bits and pieces to do cool stuff for your Web site: an animation tool to get things moving, something to help make interesting backgrounds. All sorts of things that are really about beefing up the things that have gone before.

The Internet is popular

And you don't really realize just *how* popular until you notice all the smarty pants software dudes lining up to sell you stuff.

Nowhere is this more true right now than in the area of Web site creation tools. That makes for a very competitive market, with software companies climbing all over each other in an effort to secure your purchasing dollar. The market seems almost saturated with tools of all shapes and sizes. You won't have any trouble finding stuff: where you might have trouble is in picking the jewels from the dreck.

The good news is, there are lots of jewels. Software vendors seem to finally be waking up to a fact that you and I have known all along: the best way to impress customers is to give them really kick-butt products—stuff so good they don't *want* to go anywhere else. A lot of the very latest tools seem in tune with this credo: make it good, and they'll come. Make it better and they'll come back.

Looking at tools

We'll start by looking at HTML editors. In future issues of *TCP*, we're going to look at the three classes of Web creation tools, as well as some of the individual tools that software vendors are marketing. The Internet, being the place of creation and free distribution that it is, holds a wealth of tools, so we'll look at some of the free and shareware pieces that won't set you back a bundle. As well, we'll review some of the heavyweight stuff that's likely to put a dent in your pocketbook.

HTML editors

Whatever other stuff you get, you're going to need some type of editor to help you create the code that Web browsers translate as Web pages.

Strictly speaking, you don't need any type of special tool to do this for you. You can use any type of text editor or word processor that will output a file as text or ".txt" format. What you *do* need, in that case, is a good working knowledge of HTML (hypertext markup language) or at least a good book on the subject so you'll know just what type of code to input.

Although some people call HTML a programming language, in the strictest sense it really isn't. As the name suggests, it's a markup language and anyone familiar with

Continued on page **119**

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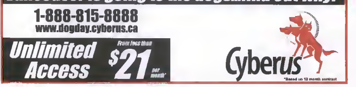
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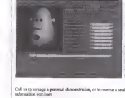

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Weaving your own Web site: Part XXIV

HTML elsewhere Pt. I: XML

BY BEITH SCHENGILI-ROBERTS

In the ever fast-changing world of HTML standards and developments it seems as though things are not slowing down, but are in fact speeding up A working draft of the HTML 4.0 specification has just been released, and is expected to be finalized sometime this Fall In the meantime, other standards are being foisted upon the HTML authoring community In the last issue we saw how Netscape and Microsoft had devised competing on line help systems based upon HTML. In the next couple of articles, we look briefly at two up-and-coming languages that are designed to augment, HTML. XML and CDF They may not mean much to you now, but expect them to become a major part of the way you surf the Web, and of how Web designers craft their pages.

Extensible markup language

Ever since the beginnings of the Web there have been people who have touted the Standardized General Markup Language (SGML) as a possible successor to HTML. In fact, HTML was originally derived largely from SGML, and inherited two of its underlying principles.

- that the code be in a form that can easily be read by both computers and people
- and that the code describe the logical structure of a document

While HTML has arguably kept true to the first point, it has strayed significantly from the second Much HTML code is now based upon the principles of layout similar to what you would find in a word processor or a desktop processing package Generally speaking most people use the descriptive form of a tag, like the bold (<B>) tag, rather than the logical form based on the strong (<STRONG>) tag, both of which do exactly the same thing This may seem like splitting hairs over a very minor difference but this design difference is due to one of the properties of SGML that HTML did not inherit: SGML tags can be designed by the people using them in a document

SGML uses Document Type Definitions (DTDs) that define the type of document that is marked up The DTD tells the browser how to handle each element· so if you wanted to create your own tag called <FIRSTNAME> <LASTNAME> or <PHONENUMBER> you could do so, if you didn t mind spending the time to define the DTD for them first HTML has its own form of DTD too but it is fixed and resides in the browser, and cannot be changed by the user Defining a DTD is not necessarily an easy thing to do however and what was lost in fixing HTML "in place " was more than made up for in terms of ease of use However, this fact did not keep some people from wanting to extend HTML tags in their own way but unfortunately HTML simply doesn't allow for this That is until the Extensible Markup Language (XML) came along

Introduced by the World Wide Web Consortium (W3C) XML is a language that lets you use SGML on the World Wide Web Unlike HTML—but like SGML—XML does not have a fixed format.

Through the W3C, industry players like Netscape and Microsoft are working to expand HTML to make it into a more flexible and robust language for creating pages on the Web. However, different groups are developing different elements and attributes for HTML, and the end result is plenty of conflict and little agreement on what new elements should be developed and standardized in Web browsers. However, it has become increasingly clear to many that continually adding new tags to support an ever-increasing set of demands placed upon HTML as a whole was not the answer. In response to this situation, the W3C has introduced XML.

XML is important because it has much of the power and flexibility of SGML, but is much simpler to implement. Web Authors can take advantage of XML by using it to mark up documents in such a way that an XML-capable browser can read and display the tags in a way that the Web author desires This flexibility means that XML can be used to create new tags designed to be used by certain audiences. For example a math department at a University could create a DTD to meet the unique needs of the department Similarly XML could be used to properly display and document such things as music engineering, or scientific documents in ways not currently possible under HTML. Browsers could even be developed to suit an particular type of XML DTD, so that the customized browser could read all the documents using that DTD

Here's an example of a possible XML document:

```
    <?XML VERSION="1 0" RMD="NONE"?>
    <FUNNY>
    <FUNNYGUY>Knock knock!</FUNNYGUY>
    <STRAIGHTMAN>Who s there?<STRAIGHT
MAN>
    <FUNNYGUY>Sam and Janet!</FUNNYGUY>
    <STRAIGHTMAN>Sam         and         Janet
who?<STRAIGHTMAN>
    <FUNNYGUY>"Sam and Janet evening, you
may find a stranger..."</FUNNYGUY>
    <STRAIGHTMAN>I don't get it <STRAIGHT
MAN>
    </FUNNY>
```

As you can see you can use XML to describe and format just about any kind of document, you only have to create the DTD to define whatever tags you need

Pie in the sky? Perhaps At the time of this writing XML is still very much in development however there are several Internet resources that discuss its background advantages and implementation To find out more about XML, check out these Web sites. The XML FAQ at http://www ucc.ie/xml/#FAQ-GENERAL and the XML Draft Specification from the W3C at http://www w3 org/pub/WWW/TR/WD-xml-lang-970331.html

Continued on page 119

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Cooking spam

Continued from page **112**

Internet-related legislation that could follow it) the EFC instead recommends that both ISPs and users come up with their own solutions. Their stance is that ISPs should create and publicize a policy with regards to spam and their stance on it Some sort of reporting mechanism would be necessary so that people could report abuses of the policy Many ISPs have already instituted such a policy which generally tries to discourage the abuse of email privileges on their systems, and encourages people to report abuses. People caught sending spam typically have their accounts terminated

In addition users can also take it upon themselves to help stem the tide of spam by using filtering mechanisms The ultimate goal would probably fall somewhere along the lines of the EFC's ideas of a software-based "executive assistant." Ideally, it should be a new kind of mail program that could "categorize incoming mail, according to its apparent importance. No mail would be deleted or censored but it would be sorted, with messages that are likely to be spam being given the lowest priority" By adding some artificial intelligence available today "the mail program could 'learn' which senders and which messages were likely to be spam For instance, Get Rich Quick would pretty quickly become an indicator of spam"

Unfortunately no such email program exists as yet, but there are things you can do right now with many existing email programs. Many email programs these days come with a basic filtering system that allows you to block email from specific addresses or with key words Both Netscape Communicator and Internet Explorer's email program allow the user to create rules to sort incoming email into various folders The same capabilities exist in most other commercial email programs.

Your ISP may also be able to help you screen out spam. Some ISPs can set up a screening program that stops spam from getting to you at all. Interlog is a major Toronto-based ISP that recently set up a program called "NOSPAM that stops email from getting to users when it originates from a well-known spammer on the Internet

Jamie Reid a system administrator at Interlog who helped set up this program on the ISP, says they were responding to complaints from users as to the spam coming in from rogue Internet providers encouraged the use of their services for sending spam. Based on his own experiences and complaints he received while answering mail to Interlog's postmaster, Reid found on average "If a user posts in Usenet, and leaves their real mail address in the message, they can expect to receive a minimum of one to four messages a day from spammers." The NOSPAM program he helped to create has received high praise from its users, who are also able to add and remove email addresses of people and rogue Internet providers sending them spam

The only major drawback to this type of program is a possibility that it may keep out email from a friend or associate. As an example of this, I recently got a spam from a popular free-email service I have several friends who use this service, so I didn't want to simply screen-out email from this service In the end, it turned out that the email had been forged, and did not in fact come from the free-email service in the first place However I was very close to simply blocking all email from the site, which would have kept out more useful email from the site than not If you feel confident about using an email blocking program on certain addresses and do not mind the possibility of missing out on some non junk email then you should consider investigating email screens further Check with your ISP or online service to see if anything like this is in place

A future for spam?

Is spam here to stay? In the short term, yes but in the long term, who knows? Better email programs and enhanced filtering systems may eventually mean an end to spam as we know it At least, we can hope that is how things will happen Increased knowledge and awareness about spam email and what can be done to combat it are percolating through the Net community and those seemingly few legitimate entrepreneurs who try to sell their wares online are realizing that spam is not the way to go

Still, pyramid schemes abound not only on the Internet but in the real world Remember the saying "a fool and his money are soon parted"? It is a very old saying, and will likely be applicable in both the virtual and the real world for a long time to come ❑

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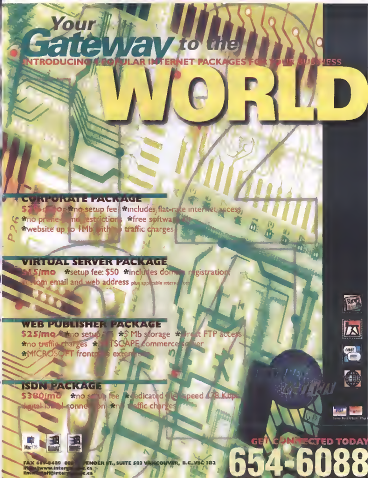

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Tools for creating on the web

Continued from page **113**

high end typesetting equipment of days gone by will feel instantly at home with HTML. As with those typesetting machines HTML lets you talk to the computer in a language it understands so that you can tell it what you want to present to the world, and how you want to present it.

It's good to know all this stuff, just so you understand some of the "whys" of what you're doing. However, many of the newest HTML editors don't require that you know HTML at all in order to create Web pages.

Flavors of HTML editors

HTML editors come in three basic flavors.

- **Straight text editors.** These are the classics of the Web world. You input the code entirely by hand. Some of the more advanced versions will do some of the formatting for you at the click of a key stroke or by programming a macro or two. But what you see when you're looking at your file is HTML code. Some people aren't comfortable with that. And some people—many of them professionals—won't have it any other way. BBEdit and CMED are both examples of this type of HTML editor.
- **WYSIWYG Editors.** These are the editors that are capable of doing everything for you. They also make up the category with the most new entries. This is at least partly because the technology that backs the Web is just catching up with the capabilities of the Web itself. HTML editors that could create good code pretty much on their own weren't even around a year and a half ago. Now they're the largest part of the market. Adobe PageMill and Claris Home Page are examples of this type of editor.
- **Hybrid Editors.** I made up this classification because it best seems to define this not-one-or-the-other category of HTML editors. These are editors where you see the code *and* see things happening while you do the coding. Personally stuff like this makes me crazy but some people really like it. HotDog is of this ilk, and HoTMetaL has elements of both this and WYSIWYG, depending on the mode you run in.

Fortunately in such a large competitive and potentially confusing field, software vendors anxious to make a sale are falling all over each other to get demos of their products in your face. Actually being able to play with a working version of the type you think you'd like best is an excellent way of deciding what to decide on!

Let's take a quick look at some of the more popular options.

Claris Home Page 2.0

Platform: Macintosh, Windows 95/NT

System requirements Mac: 68020 processor or better, System 7.1 or higher, 8MB RAM, CD-ROM drive

System requirements Windows: Windows 95 or NT 3.51 or higher, 8 MB RAM (16 MB for NT), CD-ROM drive

Web site: http://www.claris.com

Even the templates provided with Claris Home Page 2.0 show elegant and professional-looking sites.

Claris Home Page is typical of Claris' newest software in that it's a delight from purchase through to output. At purchase, it's easy to buy because it's pretty inexpensive. Once you get it home, it's easy to install on either of the platforms it runs on. Most important for an HTML editor, it's easy to use.

For those interested in such things, the Mac and Windows versions seem to run identically. Also important, they both generate the same type of code. In this case, the code is the very best thing of all. Claris Home Page 2.0 is the only one of the many WYSIWYG HTML editors I've used that can be induced to create perfectly clean code. That is, the others all sneak some sort of proprietary tags into the HTML code, tags that have nothing to do with executing the file on the Web. Claris Home Page doesn't do that.

The code for the previous file. Nice and clean and just an icon click away from the main toolbar.

Things I like: WYSIWYG-generated clean code ranks near the top for me. And it's true WYSIWYG, which not all of them are. The interface is clean, uncluttered and easy to parse. Also it's a very simple matter to toggle between straight code and WYSIWYG mode so if you want to get in and do some hand coding, it's very easy—just an icon on the main tool palette.

Things I don't like: For a program as simple and elegant as Claris Home Page 2.0 appears to be, the overhead is very high. On the Mac, it commands over 5 MB of running room. Overhead is similar in Windows 95. This seems excessive and unnecessary to me.

Summary: In my opinion, Claris Home Page 2.0 is the very best of the WYSIWYG HTML editors. The interface is great. It's easy to learn and works well with a number of other types of programs and files. Best of all, it doesn't sneak any flaky code into the files it creates when you aren't looking.

Continued on page **122**

Weaving your own web site

Continued from page **114**

At the moment there is no browser that supports XML code that you can write your own DTD for but that does not mean you should dismiss it — a version of XML is coming sooner than you think. You may even be viewing it in your browser without knowing it. XML is being used in the development of the Channel Definition Format (CDF).

So what is CDF? It has been developed to become the standard means of delivering "push" content to a user. Push content "pushes" content at a user who is interested in seeing the type of content at a Web site. It is the same type of technology behind such popular programs as PointCast—and it will soon be available to the ordinary Webmaster. And it is the topic of the next article in this series. ❑

Keith Schengili-Roberts welcomes any comments, suggestions or HTML tips and tricks you may have. He also wishes to thank Kim Silk-Copeland, Web co-ordinator for EXN (http://www.exn.net), for extensive help with this article and the one to follow.

You can email Keith at: kschengi@interlog.com. His book on HTML, The Advanced HTML Companion *(ISBN 0-12-623540-6) is available in bookstores. Previous articles in the series can be found at* The Computer Paper *Web site at: http://tcp.ca/*

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138 Other/Peripherals
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Exploring IRC

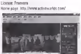
BY SCOTT SWEDOBSKI

Everyone's talking. Perhaps it is the novelty, the thrill of being anonymous, or the fact that literally hundreds of people can share the same "room" and still be anywhere in the world, but Internet Relay Chat (IRC) remains popular, despite the advent of voice-based chat clients. One of the IRC's main limitations has been the arcane nature of its clients.

While browsers have improved in leaps and bounds, there has been relatively little improvement in IRC clients in the past year, most likely because there is less commercial motive. Some of the more adventurous companies are now starting to offer specialty chats with rooms for celebrities, psychics and business gurus. Others are offering non-IRC chat servers that are moderated to keep out spam and abusive users. They may be free or charge a small annual fee, but IRC servers remain open to the public, free of charge.

Active Worlds Browser

Version: 1.21 Build 162
Revision date: June 29
Filename: awb.exe
Byte size: 1 260 834
Licence: Freeware
Home page: http://www.activeworlds.com/



Active Worlds Browser is a real time chat software client that can be used from the World Wide Web. Its 3D-type interface allows everyone to adopt an "avatar" and rather than chat rooms, you point and click to walk closer to different groups of people. There are many "worlds" available where you can go to chat with different people. The Active Worlds interface is more like a game than a chat client, a calmer version of Doom where people talk to you instead of shooting at you, and where clicking on newspaper boxes brings up a Usenet browser or an online magazine. It is even possible for you to design your own online world.

IChat ActiveX For MSIE 3.0

Version: 2.2
Revision date: Dec. 23, 1996
Filename: icia222.exe
Byte Size: 1 087 655
Licence: Freeware beta
Home page: http://www.ichat.com

IChat Plug in for Netscape

Version: 2.22 2.13
Release revision date: Feb. 13
Filename: icnp222.exe
Byte size: 1 433,887
Licence: Freeware
Home page: http://www.ichat.com
Also available: Windows 3.x
Version description: The Ichat Plug-In for Netscape 2.0 is a software Plug-In for users of the Netscape Navigator browser that allows you to connect to IRC and Ichat servers around the world.

IChat is a plug in available for both Microsoft Explorer and Netscape. You must visit IChat's site at http://www.ichat.com/ to log into the IChat servers, a collection of different sites arranged by topics. While the selection is not as profuse as IRC, the level of chat does tend to have more signal-to-noise ratio. Specific companies sponsor iChat rooms, some requiring extensive information before permitting access.

Internet TeleCafe

Version: 3.00i
Revision date: April 15
Filename: tc300-32.exe
Byte size: 1 750 246
Licence: Shareware
Home page: http://www.telecafe.com/telecafe/

One of the largest social chats of its kind, Telecafe has over 19,000 members from around the world. Telecafe has software for

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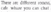
Windows 3 1/95 and Java and the software is free of charge You must pay for a membership to the Cafe to have access to the advanced features The TeleCafe is simpler to navigate than standard IRC servers, and the users tend to be more focused and friendly There are different rooms, set up like a real cafe where you can chat about a variety of topics.

Microsoft Chat



Version 2.0
Revision date May 4
Filename mschat2a exe
Byte size 1 780 912
Licence Shareware
Home page
http://www.microsoft com/ie/comichat/default htm

Microsoft Chat is a new kind of graphical chat program As users type, a comic strip unfolds showing the various participants in the conversation as comics characters, and their words pop up in comic balloons

This is the most fun of the chat clients, because once you pick your character, you literally become part of an interactive cartoon Your character can be happy sad shouting or whispering and can be male female or a space alien of indeterminate gender! The challenging part is that there are only a few characters to pick from, so after a while the chat does get a bit confusing Comic chat is a lot less technical than other IRC clients and is an excellent starter chat program for kids but may not have all the features available in some IRC clients

You can use Comic Chat to access any IRC channel, by turning off the CC specific coding but this does not seem to change the experience on the user s side The additional graphics do not slow down the chat in any way as they are resident on your computer

Chat etiquette

Now that your client all picked out, you may find that it pays to be patient as you explore IRC In some clients, you must use the IRC command-line, which can be difficult for beginners. Explore your new client with a sense of play and try out the different commands and buttons to see what they do. Here are some common tips

It is not wise to pick a suggestive or flirtatious nickname, unless you are interested in suggestive and flirtatious comments from other users

When you use the IRC or a Chat Server, your message is displayed in dozens of homes across the world Consider yourself to be a guest in 25 million homes, and remember if you are rude you can expect a rude response

Sometimes it is better to ignore a chatter than to respond publicly Most clients let you ignore obnoxious users It s usually a waste of time trying to get them to act maturely—the more upset you are, the more amusement you provide.

Realize that a message does not appear on all systems at the same time, and the number of different systems hooked into the Net makes it likely that down time or other problems may cause message lag Don t assume that you are being ignored if you do not receive an immediate response

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2 2.5 Cows Fair
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Gates now worth US$36 billion • According to recent calculations published in the financial press the paper value of Bill Gates's personal wealth (based mainly on his holdings of Microsoft stock) is now in the neighborhood of $36 billion

This is about double previous estimates of his wealth and is based on increases in Microsoft share value due to continuing increases in sales and profits. Paul Allen, Gates' partner and co-founder of Microsoft who left the company many years ago is thought to have a personal worth of about $6 billion also mostly based on Microsoft stock.

Gates is on track to become history's first $100-billionaire in just a few more years, if the trend continues. Although questions about his personal worth often make Gates testy, he is reported to have said his ultimate intention is to give most of his fortune away to charities when he retires. In the meantime Gates has shown increasing interest in giving away small parts of his fortune to worthy causes, and to directing Microsoft to be a more active good corporate citizen.

His main charitable interests appear to be in education (Microsoft Canada has made substantial donations of computers software and cash to Canadian libraries and schools in the last couple of years) and scientific/medical research (Gates appears to have an ongoing interest in biotechnology)

Even if Gates wanted to give most of his money away now it would be difficult since his ownership of a very large block of Microsoft stock is insurance against attempts to oust him (unlikely but possible some day), and frankly his fellow plutocrats might think he was becoming unhinged)

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Tools for creating on the web

Continued from page **119**

PageMill doesn't ship with tons of templates like some of the other WYSIWYG HTML editors do. However the tutorial stuff is pretty good and some of the ideas could be a springboard to your own work

Adobe PageMill

Platforms Macintosh Windows 95 & NT
System requirements Macintosh 68020 or greater processor Mac System 7 1 or later 8 MB of RAM with 4 MB available to PageMill
System requirements Windows 486 or greater processor 8 MB of RAM (16 MB for NT) 10 MB available hard disk space VGA or higher resolution monitor CD-ROM drive
Web site. http://www.adobe.com

Adobe consistently creates knock em dead products in the graphics field It's built a worldwide reputation doing just that. PageMill doesn't fall short of the company's reputation for high-quality, well-researched and executed products PageMill 2 0 is solid, easy to use and a vast improvement over Adobe's initial WYSIWYG HTML offering PageMill 1 0

The code for the previously shown page is easily accessible through the Edit menu If you look closely at the code you'll see some of those nasty tags right here PageMill even puts them back in after you take them out Argh!

If you ever looked at version 1 0 you might remember it for all the things it didn't have No support for frames or tables no way to view raw HTML code and other major oversights. Version 2.0 corrects all of those things, while keeping some of the things that made PageMill of interest to new Webwrights from the get go.

Things I like PageMill showcases Adobe's expertise in the design field. That's the reason so many designers feel instantly comfortable with PageMill the interface is like a well-worn chair to artists who cut their computing teeth on Adobe programs like Illustrator and Photoshop

Things I don't like PageMill 2 0 adds a number of obscure and as far as I can tell useless tags to its HTML. Stuff like NATURALSIZEFLAG does nothing for my Web pages except confuse their author

Summary PageMill is easy to use and capable of doing all of the things that an HTML editor should do The interface is intuitive, the documentation is Adobe-sharp Overall it's a great package at a reasonable price However PageMill's insistence on adding extraneous tags to all of the code it produces will continue to hamper the program s success with professional Web designers

BBEdit 4 0 & BBEdit Lite

Platform Macintosh
System requirements MacOS 7 0 or later Use of System 7.5 is recommended Mac Plus or later 700KB application RAM
Web site http://www.barebones.com/

BBEdit remains a favorite with Macintosh Web designers. Many professionals consistently choose BBEdit, and have been doing so for several years and through many upgrades

BBEdit doesn t have a lot of bells and whistles and extras and it does require that you learn a bit of coding. But the program is rock solid requires little system overhead and the full version (4 0) offers the depth of features that professional Web developers demand hence the program's ongoing popularity with that set

It should be noted that when we talk about BBEdit, we re essentially talking about two levels of the same thing. BBEdit Lite is free (not share) ware and is a great introduction to the program especially at the price The Lite version is not crippled in any way It doesn't time out, and offers full save and open functions though it does have considerably fewer features than the commercial version However it s possible to write fully functional Web pages with the Lite version and many people do, at least initially

Version 4 0 is both full featured and reasonably priced a combination that sees a lot of early users upgrading

Things I like: BBEdit is solid and—as far as HTML editors go—ancient That means that there have been many generations of the software and early bugs have long since been removed.

Things I don't like. As far as I know, BBEdit 4 0 must be ordered via mail You can t just waltz into your software store and buy it Other than that, there's not a lot to dislike

Summary. BBEdit is dependable and geared to the needs of Macintosh based HTML authors and software developers. It isn t about flash and it doesn't play at WYSIWYG Rather, it delivers on its intention. a rock solid professional tool

CMed

Platform Windows 95 & NT
Web site http://users highway1 com.au/~cmathes/

What BBEdit is to the Macintosh community, so is CMed to Windows users At least, as much as it can be in a market as completely saturated as the PC software market. There are lots of contenders, but CMed is popular with the knowledgeable geek crowd, for several really good reasons.

For a non WYSIWYG editor CMed is very easy to use It has a nice clean interface and the rows upon rows of available toolbars are easily encouraged to hide elsewhere if they annoy you, you need more room or you only work with the toolbars you need right then And CMed is cheap which is always a nice plus. It's shareware and if after 30 days you find you like the program and want to keep it around you are required to register it for a very modest fee (approximately $35)

The things I like: One of the things that really makes CMed rock for me is the fact that it looks, feels and acts like Windows software while still behaving like—and being!—a true text-based HTML editor.

Things I don't like: The documentation is a little weak. There is a help file that works within the program, Windows-style but I'd like to see that backed up with some sort of text files. CMed-created HTML files would make lots of sense to me

Summary CMed is an HTML classic. No Windows-based HTML author should be without it

Microsoft FrontPage

Platform Windows 95 & NT Macintosh

Continued on page **124**

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Tools for creating on the web

Continued from page ***122***

System requirements 486 or higher processor 8 MB of RAM (16 MB on NT) 30 MB of hard disk space CD-ROM drive for installation
Web site http://www.microsoft.com

In many ways, FrontPage is gorgeous software. For a big, honking package it's relatively easy to use. The page creation portion of this program works as advertised, in that it's possible to make Web pages easily and with maximum efficiency using the software. Also, the dozens of templates mean non Web savvy designers can snap a Web site together at the drop of a cap.

The interface in FrontPage is reasonably intuitive making building a Web site and working with home pages pretty straight forward

However, FrontPage 97 has the ability to add ActiveX components and other proprietary "Microsoftisms" to the HTML code that can mean trouble in the henhouse. Pages with these items will function fine when viewed with the Microsoft browser, but will sometimes not display correctly in Netscape's browser.

Things I like: I very much like FrontPage's approach to the larger picture. From the beginning, the software encourages you to think about your whole site, rather than just the pieces of it. Also, FrontPage, like other parts of the Office suite (which—in the strictest sense—FrontPage is) is easy to use.

Things I don't like: The Netscape-unfriendly code FrontPage is capable of producing overshadows everything else for me.

Summary: If FrontPage was capable of generating HTML code without lots of extra bits, it would be the big winner in its class. But it does and so it isn't, nor can it be, with Web publishing professionals.

HoTMetaL 3.0 makes it super easy to generate simple Web pages through a series of templates. If you use the templates you find that a lot of the work has already been done for you, as shown in this example of a template to list your favorite home pages.

HoTMetaL 3.0

Platforms Macintosh Windows 3.x/95/NT
System requirements Macintosh MacOS System 7.0 or higher 68030 25 MHz (68040/PPC optimal) 8 MB RAM (12 MB+ optimal) CD-ROM drive for installation.
System requirements Windows 486/33MHz (Pentium optimal) 8 MB RAM (12 MB+ optimal) CD-ROM drive for installation
Web site http://www.softquad.com

To my never-ending surprise, **HoTMetaL** remains a hot favorite with many amateur Web site builders. I'm not quite sure why that is. The software is competent, sure. It's well marketed and the box is great, as is the documentation.

The recently released version 3.0 offers lots of new features including site management and support for batch conversions, CCS (cascading style sheets) and a built in graphics toolbox. However, a lot of designers—moi included—don't want one program that'll do everything, plus walk the dog.

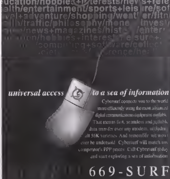
Unless, of course, it'll handle graphics as effectively as Photoshop or DeBabelizer (it doesn't), or manage Web sites with the aplomb of SiteMill or FrontPage (not even close). Another thing in its favor, though, is it does all the things that it does do at a pretty reasonable price. Also, this software that is beloved by a lot of Web designers throughout the galaxy is made in Canada. I don't mind that part, either.

Things I like: The templates provided with HoTMetaL 3.0 make it incredibly easy to build a Web page without having the faintest clue of what you're doing. Just replace the template's stuff with your own and—boom!—Web page. If your goal is a simple, no frills Web site and you don't have any desire to move on to more complicated projects, HoTMetaL really isn't a bad choice.

Things I don't like: It's a personal thing, but the hybrid interface really bugs me. I want WYSIWYG or I want pure code, but looking at both at the same time makes my ears sweat. Also, the tool bars are a bit much. If you must have everything accessible on-screen, a palette configuration such as Photoshop or even QuarkXPress seems a lot more sensible. Having everything in a toolbar means a cluttered work space, even with some of them put away. I'd rather have easier menu access than toolbars stuffed full of icons that require some effort to identify.

Summary: HoTMetaL 3.0 is rock solid and beautifully presented. It's a nice package that offers good value. For the home-coder who wants to build their own Web site but doesn't care to learn HTML, HotMetal will fill the bill. However, few professionals or even Web designers who spend a lot of time building Web pages will be happy with HotMetal. Not with all of the other options available. ❑

Linda Richards' latest book, *Web Graphics For Dummies*, will be published by IDG Books early this fall. She is presently at work on *The Visual Quickstart Guide to DeBabelizer* for Peachpit Press. Richards is also the author of *Teach Yourself Photoshop 4.0* (MIS:Press), *The Canadian Business Guide to Using the Internet* and numerous technology articles. She can be reached online at scrybe@istar.ca



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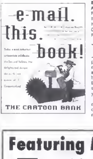
Cartoon compilation comments on computer culture

BY KEITH SCHENGILI-ROBERTS



E mail This Book!
Author: The Cartoon Bank
Publisher: Knopf (dist. by Random House of Canada)
ISBN 0679450858
Hardcover 113 pages 1996
Comes with a CD-ROM
Price: $23.50

Has your hard drive crashed on you taking all of your data with it? Bombarded by junk email? Are computers just generally driving you crazy? If you need to laugh at computers rather than cry about how they are sending you round the bend, then this may be the book for you. Better yet, just like the title says, you can share the humor with an email pal by sending your favorite cartoon from the book as well.

If you read *The New Yorker* you will recognize many of the cartoonists (and some of the cartoons) contained in this book. You may not be familiar with such names as Robert Mankoff, Lee Lorenz, Charles Barsotti, Jack Ziegler, and Arnie Levin, but chances are you have seen their work. All of the cartoons depicted in the book are fun, witty pieces on the ways computers have left their mark on modern life.

One of the more interesting aspects of the book is the accompanying CD-ROM, which contains digital representations of all of the cartoons in the book. The idea is to send copies of your favorites attached to an email to somebody you'd think would appreciate a topical computer cartoon. The disc works on both Macintosh and Windows platforms, and there are extensive instructions on how to attach an image into an email message for both of these systems. As long as the images are used for non-commercial, personal use you are free to email or fax as many of them as you want

Continued on page **127**

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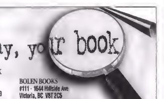

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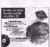

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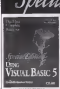

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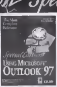

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Web Journal explores scripting languages

Scripting Languages: Automating the Web (World Wide Web Journal)
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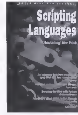

The latest issue of the *World Wide Web Journal*—which is more book than magazine—explores how to use scripting languages to automate processes on the World Wide Web Put out by the World Wide Web Consortium, the official standards body for the Web, previous editions of the *Journal* have provided in-depth, technical knowledge on various topics of interest to Web designers and programmers

While hypertext markup language (HTML) offers a lot to the Web designer scripting languages are needed to add such things as support for online forms, and advanced navigational capabilities, or simply to make pages more lively Scripting Languages guides users and developers in choosing and deploying scripting solutions. There are articles on JavaScript, Python, and VBScript, all generally looking at the more technical aspects of each language, and practical examples of how they can be used For those who work with Web servers, there are several articles on Common Gateway Interface (CGI) and Perl, including an in-depth interview with Perl developers Larry Wall and Tom Christiansen

There's lots of good info here, but at more than $40 for such a slim volume, it is kind of pricey But if you are a professional Web designer or developer, you need serious books The quality of the information is also a step above what you could generally find on the Web for free Finally, note that this book is not designed to be an introduction to scripting languages, but requires the reader to have some basic programming skills.

— Keith Schengili Roberts

Rating
Information content: ****
Readability: ** 1/2
Intended for Intermediate/Expert
Overall Rating: ***

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Humor to enjoy via email

Continued from page **125**

The images contained on the CD-ROM are all images culled from the Cartoon Bank, a computerized data bank of more than 25 000 cartoons from many of the leading cartoonists The bank was set up in 1992 by Mankoff, a cartoonist whose works have appeared in *The New Yorker* since 1977

The big downfall of this little book is its price—$23 95 Books like this are generally designed to be given away as gifts, and generally are among the first to drop dramatically in price or be found in the remainder bin If you find a copy of this book at what you think is a reasonable price, and know somebody who would get a chuckle from the many foibles depicted of people working with (or more often than not, working against) their computers, then it's worth picking up ❑

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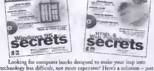

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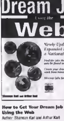
Pounding the Web for a job

BY KEITH SCHENGILI ROBERTS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How to Get Your Dream Job Using the Web
Author: Shannan Karl and Arthur Karl
Publisher: Coriolis Group Books
ISBN 1-57610-125-5
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Many people do not know it yet, but the Internet is becoming *the* source for employment opportunities in many industries More and more companies are turning to the Internet and the World Wide Web in a search for future employees

This isn't limited to those businesses involved in Web-related industries, such as computer software and hardware companies, but it increasingly includes all other types of businesses as well *How to Get Your Dream Job Using the Web* is a good book for the beginner, containing a lot of common-sense information in a single package

Shannon Karl and Arthur Karl look at the ways in which businesses are increasingly looking to the Web for employees The Internet has a lot to recommend itself for businesses it is often far cheaper for a firm to advertise a job on the Web than it is in a newspaper

Unlike a newspaper, the Web doesn't ask you to pay for advertising space by the line—so Web site job postings often contain much more information than their printed equivalents. As the authors point out, many medium to large-sized companies on the Web heve a section of their Web site devoted solely to recruiting new people

The authors also look at the way individuals can promote themselves online The art of the "online schmooze" is detailed—where you are most likely to find job listings on such places as Usenet newsgroups, and how you can put yourself in a position where you are most likely to meet people who may be in a position to help you find a job

One of these methods is to create a Web page for yourself that promotes you and your abilities This does not necessarily just mean that you place your resume online the book looks at ways in which you can use the Web to show off your particular skills such as putting some of your portfolio online if you are an artist or photographer.

The book is aimed at people who are new to the Web and Internet, and who need a guide to where to find job opportunities A lot of the suggestions are common-sense to those people who have been using the Internet and the Web for a long time but could prove invaluable to those who are relatively fresh to the online experience

There's a lot of filler in this book a listing of just the truly useful tips and tricks would make the book much smaller and more concise Its listing of *Fortune 500* companies on the Web would be far more useful if it included geographic listings of its offices so the user won t waste time wading through each Web site before finding that a firm doesn t have an office in his or her town

The book also includes an extensive section on the basics of making a Web page for yourself (the accompanying CD-ROM comes with software that will help you out with this aspect of things)

How to Get Your Dream Job on the Web is a good book to help would-be online job hunters focus on the task at hand and give themselves an edge over their un-wired competitors. While the book suffers from being more bulky than is necessary, it does contain a lot of genuinely useful tips and tricks that will help you find a job. ❑

Rating
Information content ***
Readability ****
Intended for Beginner
Overall Rating ***1/2

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Rating
Information content ****
Readability **
Intended for Expert
Overall Rating * 1/2

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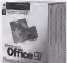
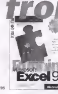

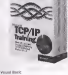
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OPENING IN SEPTEMBER IN BURNABY

Guide covers NT basics and troubleshooting

O Reilly Windows NT In a Nutshell: A Desktop Quick Reference for System Administration
Author Eric Pearce
Publisher O'Reilly and Associates
Softcover 350 pages
ISBN 1-56592-251-4
Price US$19 95

As the use of the Windows NT operating system continues to proliferate at all levels of computing, from the home-based "power user" to the large-scale business enterprise, a great many of its new users are discovering a need for help in becoming proficient with this most recent entry in the operating system wars O'Reilly & Associates, a publisher best known for its excellent UNIX reference books, has just released the latest title in its popular *In a Nutshell* series

Windows NT in a Nutshell is a concise, simple-to-use guide to understanding Windows NT in a practical hands-on way The book is organized to offer realistic examples of problem solving, while logically explaining the parts and operations of the Windows NT graphical user interface (GUI) Although Windows NT shares a similar surface appearance to Windows 95, its internal workings are different enough that a special reference on NT is very worthwhile Features such as NT's multiprotocol networking, Internet services and security features merit special attention

Windows NT in a Nutshell starts with the basics of the Windows NT user interface but quickly proceeds to detail advanced troubleshooting and system administration tasks The guide covers both the *NT* Server and the NT Workstation programs, and is an indispensable reference for helping NT users develop from novices to experts in the use of Microsoft's first truly professional O/S.—*Keith Schengili-Roberts*

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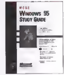

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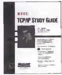

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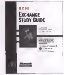

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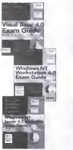

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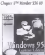

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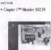

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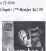

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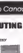

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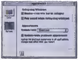
Tips for getting the most out of Mac OS 8

BY GRAEME BENNETT

1) Create aliases by pressing Command+Option while dragging any icon(s)

2) You know the "This system was not shut down properly the last time it was used" dialog box you see at startup time after a crash? It will go away by itself after five minutes, allowing unattended Macs to restart Web servers etc , all by themselves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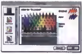
3) You have to be quick when dragging Control Panels, Extensions and Fonts to the System Folder Because the new Spring Loaded Folders feature automatically opens folders It makes it a bit trickier to install Control Panels and Extensions correctly Use Edit Preferences to set the spring-open delay to a longer time if you have trouble There is also a somewhat hidden feature where you can do a click and a half (click let up click and hold like a double-click only don t let up the second time) to go into springy folder-browse-mode The cursor changes to a magnifying glass and you can then enter folders without the need to be dragging some object Quite handy (Thanks, Tone)

4) Looking for the "Align to Grid" option? It's not in the Control Panels anymore You'll find it in the View options of the View menu Similarly the Labels command is now found under Edit Preferences. (However open up the Find File dialog to see it in its old place—this appears to be a design flaw in Mac OS 8's Find File function)



5) Web page authors: Mac OS 8 has a built in hex converter. Click any label color to access the new and greatly improved Apple color picker.

6) Command+Shift+4 allows you to capture any area of the screen as a PICT file The PICT is saved to your boot drive's root directory Adding Caps Lock captures just the window

7) Installed with Mac OS 8 is a system extension called ICeTEe. Dropping it into your system folder and rebooting adds the ability to command-click any URL in any program that supports the Mac's standard textedit routines, including SimpleText and Eudora Pro

8) Also included is a random signature generator for Eudora. Yes, we think it's weird that Eudora utilities are bundled and Eudora isn't but the fact that no less than three Web browsers and four different email packages are bundled with Mac OS 8 is a little strange too

9) You can force a full-screen graphic to scale to fit your screen by choosing an option from the pop-up in the Desktop Pictures Control panel You can drag the image to a second monitor if you have one, too

10) Remember clicking almost any item while holding down the Control key brings up OS 8 s new context-sensitive pop-up menu for that item. Unfortunately at least one useful feature of System 7 x is missing from Mac OS 8. In System 7 x, select several files in one window, then click on the header of another In Mac OS 8 the selections are canceled but in 7.x, they are retained. (Thanks, Franta)

11) The behavior that occurs when dragging a desk accessory on top of the System Folder has changed with Mac OS 8

Under Mac OS 8 if you drop a desk accessory suitcase on top of the System Folder the entire suitcase will automatically move to the Apple Menu Items folder. With System 7 5 and Mac OS 7 6 the desk accessory was removed from the suitcase and put in the Apple Menu Items folder, and the suitcase was deleted

Apple says this change was not intentional, a future release of the system software will likely change this behavior. Speaking of dragging, you can now press Option and drag to move the Control Strip to a new location

12) You can no longer set the properties of folders globally, to always display by a particular view, as you could in System 7.x. Fortunately an AppleScript such as John Blackburne's Set View Options (http://www.hk.super.net/%7Ejohnb/setviewoptions.html) can automate the tedious process of setting each one to your preference

13) Pop-ups. You don't need to use the View menu to set windows to Pop-up view mode Just drag them to the bottom of the screen. Pulling them into the middle of the screen reverts pop-ups to normal windows Unfortunately, there is a bug in the Pop-up window implementation. Duplicating a file or creating an alias in a Pop-up window using the Control-key Context menu crashes Mac OS 8 (quitting the Finder with Command+Option+Esc recovers) You can, however, hold the Command+Option keys as you drag a file or folder to make an alias.

14) OS 8's Find File utility can no longer select and drag multiple files from the "Found" list to the Trash, as it could in System 7.x. This appears to be a bug, or at least a design flaw in OS 8. Fortunately, there is an easy workaround for multiple files Simply create an alias to the Trash Can and leave it somewhere accessible Then drag the multiple "found" items to the new alias and they'll all wind up where they

➤

Wait for Next Generation Macs • As always seems to be the case, the next generation of hardware offers better performance than today's fastest systems The good news is, the wait for the next generation of Mac-compatible hardware is almost over. As MacWorld reports, Motorola's new CHRP (we've been pronouncing it "chirp") design is over 5 times as fast as Apple's original top-of-the-line PowerMacs, and due to be announced next week. Normally, we don't recommend putting off hardware purchases but Mac clones based on the new G3 processor and CHRP designs are worth waiting for until shipments begin in the next month or so

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belong (Nevertheless, along with the "moving Label menu" design flaw in the new Find File this one suggests that it is time for an update.) Find File can find text strings, too

15) Easter Egg Mac OS 8 has a hidden Finder screen, as every version of the Finder has had Press Option while choosing About this Computer... (About the Finder) to see the new and improved scene

16) Command+Shift+Option+Delete bypasses your internal hard drive allowing you to boot from an external drive Pressing "C" at startup time would normally allow you to boot from the Mac OS 8 CD-ROM or another bootable CD ROM however, an apparent bug in the Mac OS 8 CD-ROM's system folder requires that you disable extensions to get it to boot correctly Hold down the C key until you get the "happy Macintosh" icon, then hold down the Shift key Alternatively you can use the Startup Disk control panel to set the Mac OS 8 CD-ROM as the startup disk and then simply restart You cannot boot from the OS 8 disc if you have a third-party CD-ROM drive that is not supported by the Apple ROM-based CD driver.

17) A number of users (including us) have noted bus errors or address errors when starting up from the CD ROM or when the OS is installed on certain systems (apparently, a bug that was introduced after final candidate 2) Try zapping the PRAM or turning AppleTalk on if this occurs on your system If your machine hangs when trying to copy files or run an Installer, try replacing the CD extension (version 5 4) with version 5 3.3 from OS 7 6 1 This issue apparently affects clones from APS, Motorola, and Umax Apple says it has received reports of this problem and says it is looking into it

18) Changing System fonts Create Font suitcases with the names Chisel, Gadget, Sand Techno and Textile put them in the fonts folder and they will show up in the Appearance Control Panel after a restart

19) You can drag a window from any edge by dragging any of the new thicker window borders And although the Windowshade function of 7 x is gone (along with the ability to change the background patterns in the Find File dialog by holding Option in 7 x's Desktop Patterns accessory), you can use the minimize icon in the upper right corner to "roll up" windows. Note also that option-clicking this icon rolls up all windows Also try option clicking the Grow box to see another new Mac OS behavior.

20) Multiple monitors? Dragging one display icon on top of the other turns on Mirroring in the Monitors and Sound control panel. You can drag the menu bar icon or Happy Mac startup icon (press Option to move the latter) to appear on your choice of screen, too ❑

Apple's "Deal with the Devil • At the Macworld Expo keynote this morning, Steve Jobs stunned the crowd with the announcement that Microsoft, in exchange for a US$150 000 000 investment, now owned cross licensing rights to all of Apple's patents until the year [illegible]. (In what may be related news, Apple Chief Scientist Lawrence Tesler has resigned)

In the deal, which gives Microsoft a five percent ownership stake in Apple, Microsoft's Internet Explorer becomes the default web browser for Macintosh and the company thought to be the evil empire by many Macintosh fans committed to producing a version ("not a port") of Office 98 for Macintosh, and supporting it for at least five years As well the deal gives Apple cross-licensing access to Microsoft's patents during the same period Reuters reports that, in addition to the $150 million Microsoft will pay undisclosed additional patent fees to Apple. In the wake of these announcements Apple stock climbed [illegible] to 27 75, up from 19 75 the previous day Currently AAPL is trading at 26 5/16.

In other Macworld shockers, most of the board of directors at Apple was given the shoe — longtime shareholder and board bully A C. "Mike" Markkula Jr included New members of the board include Larry Ellison (CEO of Oracle) Jerry York (former CEO of Chrysler IBM), Bill Campbell (CEO of Intuit) and Steve Jobs (CEO of Pixar and Apple co-founder) DuPont chairman Edgar Woolard and Gareth Chang of Hughes Electronics Corp kept their board positions

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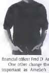
Summer at Apple: good news, bad news

BY JEFF EVANS

Apple Computer Inc. continued to generate more attention among the chattering classes in the computer market, some positive some negative and some whose significance to the fortune of the embattled Mac loyalist community remains to be seen

The biggest event was the abrupt departure of Gil Amelio who had been the chief executive officer of Apple for about 17 months. The reasons for Amelio's departure remain murky but the fact that he left without a successor named or in place point to the likelihood that it was not an entirely voluntary or amicable departure.

Apple's executive vice-president Ed Woolard stated, "In recent months, Apple has made significant progress in addressing the crises which were threatening its viability in pursuit of the best interest of our shareholders and our customers, we now want to move forward and return the company to growth and sustainable profit.. ty We believe that with a customer focused CEO and Apple's product and technology portfolio, the company will have the necessary ingredients to return to success."



Amelio's version of events has not been heard. Speculation is that his severance package included a "no-comment" clause. Apple co-founder Steve Jobs has assumed some senior management functions in the interim, sharing top spot at Apple with chief financial officer Fred D Anderson

One other change that was potentially as important as Amelio's departure was the announcement by Apple vice-president of Technology, Ellen Hancock, of her own departure from the company Hancock, a well

Continued on page **136**

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Summer at Apple

Continued from page ***135***

respected senior executive whose responsibility was to generate a technological renaissance in the Apple product line was widely believed to have been weakened by the reappearance of Steve Jobs in conjunction with Apple's purchase of NeXT operating system technology

The company's third fiscal quarterly results, announced several days after Amelio's departure, indicated a reasonably positive picture, especially compared to the immediately previous quarter. Revenues were US$1.7 billion, compared to the $2.2 billion of the third quarter of 1996. Gross margins on sales have increased to 20 percent from 18.5 percent a year earlier. The company lost US$56 million compared to a loss of $708 million in the previous quarter this year, and a loss of $32 million a year ago.

In Apple product-related news, Apple Canada, Inc. announced it is reducing prices on its leading edge (225 to 300 MHz CPU-based) Power Macintosh 6500 models by up to $400. Apple claims the price reductions "are consistent with Apple's strategy of providing the industry's most powerful and easy-to-use computers at competitive prices."

This price change, announced July 15, should also encourage some would-be Mac buyers, who were perhaps looking at lower priced Mac compatibles from companies such as Motorola or Power Computing, to reconsider buying a Mac with the Apple sticker on it.

As well, Apple Canada introduced new PowerBook 1400 notebooks with a faster 166 MHz PowerPC 603e chip, larger (up to 2 GB) internal hard drive, and faster (8x) CD ROM drive. A lower-cost DSTN color display is now available for the 133 MHz PowerBook 1400 in addition to the regular TFT screen. The price range for the PowerBook 1400 now begins at $3,599 and goes up to $4,999. ❑

Contact: Apple Canada, Tel: 905-477-5800
Web site: http://www.apple.ca

AppleTalk is a Realaudio-based Macintosh-oriented show dedicated to all things Apple/Macintosh related. Each Wednesday, from 6:00-8:00 p.m. Pacific Time, hosts Shawn King, Bob Benning and the "Windows Whipping Boy" Adam Clark, will feature news, opinion, information, software and hardware related reviews for both new and power users alike. Point your browser in the direction of: http://www.dowco.net/appletalk to hear the latest and greatest news about Apple. You will also find links and archives of previous shows. If you would like to contact the show, you can do so at mailto:appletalk@dowco.com

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Computer-based training goes online

BY ROD LAMIRAND

Only a few years ago completing a tutorial on your computer could be pretty disappointing Poor graphics and sound limited content and a one-track lesson path made the computer a poor teacher However two recent developments have made computer-based training (CBT) an exciting and more practical technology

First, modern computers have the power, the sound ability, and the storage space (CD-ROMs) to make CBT engaging Second intranets and the Internet are making CBT accessible Together these factors have created an environment where a number of companies are offering products and services in this area

Traditional CBT

Traditional CBT meant putting a diskette or CD-ROM in your computer and viewing a lesson This is still the most common form of computer-aided learning There are scores of titles in this area You can learn to type or repair your computer this way Practicing for your university entrance exam or brushing up on your algebra is also possible

A trip to your local computer software store will show that many companies are taking advantage of the power of multimedia computers to offer graphically rich and interesting lessons in everything from understanding Windows to learning chemistry Here is a smattering of initiatives in this area

One company offering a number of titles focused on business and finance is SkillsPlus Training Corporation based in Ottawa SkillsPlus sells programs such as Financial Competence Biz Math, Business Case Analysis, Introduction to Corporate Planning and Investment Basics The company will also develop a CBT course to fit a company's needs

Diversifying the channels

LearnSoft Corporation from Kanata Ont is a CBT company that offers training over a variety of channels Delivery can be over the Internet, on the clients' intranet, on CD-ROM, DVD, and other means It also offers to create customized CBT courses for businesses and governments Its products allow administrators to specify the topics they want and determine whether the material will be presented in a pre ordered sequence of topics (where topics appear in the order the administrators selected) or whether the trainees will be able to randomly choose topics what the company calls "explorer mode "

LearnSoft has also announced a Certified Advanced Technology Manager Program a general course for managers of businesses that employ a relatively high level of technology

There are scores of other companies that have developed specific lessons for vertical markets. One such company, First Class Systems, in White Rock, B C , has hundreds of courses designed to teach the basics of UNIX, the structure of databases and many other things in between First Class Systems works primarily in the corporate intranet world, although it is developing Internet access to its courses

CBT via a company intranet allows the company to install CBT courses on their company server and control when and how much training their employees receive In-house skills upgrading, which uses the company's own resources, can be a considerable savings over traditional learning which often means time away from work and the costs associated with remote instruction

CBT courses within corporate environments can often be company specific, as is often the case for the training of employees in a large financial institution or government office or more general as in the case of teaching employees to use a common word processor or spreadsheet

Another company offering a product that uses an institution's network to teach is MC2 Learning Systems Inc of Burnaby B C MC2 has written Mac- or Windows-compatible programs for students and teachers to work together The product installs on the school's network, or district WAN (wide area network) and allows students from elementary or secondary schools to create multimedia projects

Simple tools let even first grader students capture audio or visual information and put it together with information from other students for a project or presentation This educational groupware program is called Zebu and promises to make computer-based learning an easier and more interesting activity than it has been before

The product will also allow a school to use the Internet as a resource Students allowed access could be assigned a project with pre determined content Students would search for pictures, sounds facts or links about that content and place them into their project. MC2 is working with schools to make Zebu the classroom technology product that everyone has always hoped for.

Another company taking advantage of the Internet for the purposes of CBT is Scholar.com based in Fredricton, N B Scholars, in co-operation with a Microsoft education and certification division has come up with an online CBT course that prepares trainees to pass the Microsoft Online Institute's Windows NT certification exam The online course is available via the Microsoft Network or at the Scholar Web site

CBT also means testing

The Educational Testing Service, from Princeton N J has created an international testing program for individuals interested in taking the Graduate Record Examinations (GRE)

Traditionally an aspiring university student wanting to enter graduate school would take a paper-based exam that would be scored and forwarded to the institution they sought entrance to With a CBT testing system, there are fewer questions because the program evaluates answers on the fly

If the test taker does well easier questions are omitted The exam is marked when finished which speeds up the process of applying to a university Also the results are known immediately after the exam which saves the taker weeks or months of anticipation

Sylvan Prometric is also an international testing company They test for the GRE but add to that APICS (American Production and Inventory Control Society) CEBS (Certified Employee Benefit Specialist) and ABE (American Board of Examiners in Clinical Social Work) Other tests include those for aviation law and government jobs

Although this type of CBT is international in that these are testing centres all over the world, the CBT itself is run on a simple network.

Due to the international nature of the Internet, courses—and tests—can be taken by individuals all over the world Whether it is on standalone computers, on classroom or boardroom networks, or via the biggest network of them all, the Internet CBT has moved past the novelty stage and is becoming a real tool in learning and evaluating With increasing storage, power, bandwidth and sophistication of software, this trend will only increase over time Your first teacher may have had glasses and liked apples, but your next one might be the computer ❑

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ACM/SIGGRAPH Computer Graphics 2nd Tuesday at 420 Homer St. Call Tom Berryhill at 734-3976

ADAM OWNERS! Vancouver Island Senior ADAMphiles (Visa) newsletter meetings supplies. Contact David Cobley #17, 885 Berwick Rd. Qualicum Beach, BC V9K 1N7 (604) 752-1584

ALT 2600 VANCOUVER USER GROUP Meetings are 1st Friday of each month at Pacific Center Mall by payphones in food court, north of Dunsmuir at Granville 4pm to 9pm. Starts early to catch the evening shift 2600ers. For more information contact Steve via email at <sage@vanbc.wimsey.com> or <sage@rainbow.deacon.com>

AMIGA USER GROUP (PaNorAmA) For meeting times and places call Ray Norman 585-7199 or Robert Hardy 942-8384. 805 numbers 231-0363

APPLES B.C. COMPUTER SOCIETY A User Group for Macintosh and Apple IIs. Macintosh meetings are on 2nd Wednesday of each month at the York House School in Vancouver at 7 p.m. Novice and other special interest groups are held mid-month. Apple II meetings are on 1st Monday of each month at 7 p.m. at the Century House in New Westminster. For further information call 437-9835 or 299-9547

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B.C. EDI USER GROUP For more information call 632-8294 (preferred) or voice mail 532-8219.

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B.C. REGIONAL USERS GROUP SOCIETY of Hewlett-Packard Users. For information call Daren Stadchuk at 661-8753 or BCRUG at 681-8048

B.C. VAX/VMS Local Users Group (BCVAXLUG) provides a forum for the professional growth and education of its members through the exchange of solutions, ideas, and opinions. User group meetings are held the 3rd Wednesday of every other month at 6:30 p.m. with location to be advised. For further info please call voicemail 274-6866

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CANADIAN INTERGRAPH USERS GROUP CONFERENCE. September 8-11, 1998 Delta Meadowvale, Mississauga, ON "Drive The Open Road". Contact Laura Barkman, Intergraph, 2912 Memorial Dr. SE, Calgary AB T2A 7R6. Voice: (403) 569-5562 Fax: (403) 569-5801 e-mail: lbarkman@ingr.com

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COREL ARTISTS USER GROUP Last Tuesday of every month 7:00 to 10:00 pm, at Kwantlen College in Richmond BC. Monthly newsletter. Contact Bas Harcus, 533-5854

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FOXSOFT EDMONTON'S FOXPRO USERS GROUP-second Tuesday 7:00 pm Grant MacEwan City Centre Campus East Wing Room C137/C-135 10700-104th Ave. Contact Ken Rayner at 437-0315 or Robin Stuart at 460-3712 (days). Info Bulletins on BBS 457-4106

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LOTUS NOTES. see "Pacific Notes User Group"

MACWEST COMPUTER SOCIETY. Meetings for members and visitors include Shareware copy sessions, software and hardware demos and Q & A sessions. If you use a Macintosh, check us out! General meetings: 2nd Wednesday of each month. Beginner's meetings: 3rd Wednesday of each month 7:30pm, Coyote Creek Golf & Country Club 15?nd

Continued on page **140**

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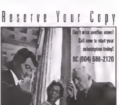

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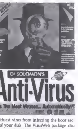
WM.CAP macro virus... and the beat goes on

JEFF EVANS



One of the latest and most rapidly proliferating PC viruses, according to Dr. Solomon's, an anti-virus software company, is the WM.CAP, a macro virus that debuted in February and has been encountered more frequently in recent months.

The virus replicates itself by copying its core CAP code into the global template and other macros in a WinWord document. It damages the global template, and deletes system macros that were present in the global template at the time of infection.

According to Dr. Solomon's representatives, detection of WM.CAP is a feature of the current version 7.71 of Dr Solomon's Anti-Virus Toolkit and an extra WM.CAP driver for version 7.70 can be downloaded from the Dr. Solomon's Web site. PC users with unknown or incurable macro viruses should send samples of suspected infected documents to support@canada-av.com for analysis.

Business is booming

The anti-virus biz is jumping these days, due both to the growing number of mean little pinheads writing tricky new viruses, and the scale of file sharing via the Internet or other networks.

In this writer's opinion, the easiest and best approach to protection against viruses on a home PC, especially for new PC users, is to ensure that a first rate anti virus program is loaded when you first turn on your new computer. Some of the principal retail anti virus brands are Symantec's Norton Anti-Virus, McAfee Virus Scan Suite, Dr. Solomon's Anti-Virus Toolkit, IBM's Anti-Virus product, and the Anti-Virus utilities in Windows and Windows NT.

Increasingly PC vendors are including commercial anti-virus programs in the software bundles that come with multimedia PCs. Anti-virus software publishers seem to be thriving in the age of nervous computing: Symantec and McAfee have announced expansions in their research, and McAfee announced June 22 it was shipping its new VirusScan Security Suite, which it claims is "the first product to offer complete desktop protection." This claim may or may not be true, but it is evidence of the fact that anti-virus technology is pretty good, and that anti-virus peddlers know that "safe computing" sells.

One of the most interesting of recent anti-virus products to hit the market is the VirusWeb, an anti-virus system from Full Circle Technologies, which consists of a half-length card that does a virus scan right at the beginning of your PC's power-up sequence, even before the hard drive turns on, preventing even the stealthiest virus from infecting the boot sector of your disk. The VirusWeb package also comes with McAfee's Virus Scan and WebScan products, which provide virus detection and elimination while the PC is operating.

PC owners should remember, however, that even the best anti-virus software is only useful if it is running on the computer whenever an infection might take place (which, in practice, is any time) and if the PC user is diligent in adding fixes for the latest viruses to his or her anti virus library. Most vendors supply new anti-virus upgrades at no charge for some period of time after the initial purchase of an anti-virus product. ❑

Contact: Dr Solomon's Web site:
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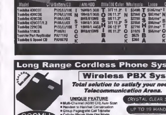

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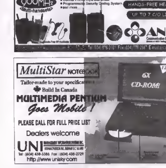

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MS ACCESS TECHNICAL USER'S GROUP For those who want to participate in learning more about MS Access. For information call Greg Hind at 454-0802, from 9:00 to 5:00.

NANUGS (Northern Alberta Novell Users Group Society) meets quarterly at the CompuSmart store on Mayfield Road For information, please e-mail to nanugs@freenet.edmonton.ab.ca or phone Allen Brown (403)487 7566.

OBJECTS USER SOCIETY See British Columbia OpenStep Group (B.C.O.G.)

OPENSTEP USER SOCIETY (VNUG). See British Columbia OpenStep Group (B.C.O.G.)

PACIFIC NOTES USER GROUP (PACNUG) Lotus Notes users meet the last Wednesday of each month (except August and December) 5:30pm at IBM. Contact Dolores Geier at 668-2141 or dgeier@ew.ca

PC/MAC USER GROUP Wanted Professional Photography/Graphic Designers to good network and meet the latest hardware and software programs available Starting May 7th we will meet at 7:30pm every 1st and 3rd Tuesday of the month at Titans Computer Center #203-1836 W 5th Ave If you are interested please forward @ Harrington at either 873-6845 or rasta@mindlink.bc.ca for further info.

PORT COQUITLAM COMPUTER CLUB Commodore Amiga IBM Mac 1st & 3rd Tuesday 7:30 p.m. Room 8 Minnekhada Middle School, 1390 Laurier Ave., Port Coquitlam. Ed Dyer-Publicity at 942-0954

POWER BUILDER User group being formed Meetings are planned for first Wednesday To enroll call Perform System Developers at voice mail 604-264-0247

SQL SERVER User group being formed. Meetings are planned for first Monday To enroll call Perform System Developers at voice mail 604-264-0247

TI 99/4A COMPUTER B.C.99er Meets Group every Thursday 7:10 p.m. For Information, call Ron 522-2508.

TEENS IN VANCOUVER USER GROUP For teens under the age of 18 interested in doing computer related projects regularly. WWW programming games anything! The main goal is to share computer knowledge and to make friends. If there are any homeschoolers interested, that would be great. If interested, email cub Orion Mak at 926-2836.

THE TOPKIDS CLUB. A user group for kids, teens and parents. Monthly meetings are family focused with software/hardware demonstrations, guest speakers, Windows and Mac tips and netfor demonstrations. A BBS is available to members. Call Garland Coulson 279-5438 or email garland coulson@topkids.com

VANCOUVER AUTOCAD USERS SOCIETY 1st Wed of the month, 7:30 p.m. B.C.I.T Bby Campus Bldg 3W5 Room 1858 Contact Frank Zander (604) 582-8283

VANCOUVER DELPHI DEVELOPERS ASSOCIATION meets once a month at the Vancouver Public Library (downtown). The meeting is usually on the 2nd or 3rd week of the month on Tue or Wed depending on availability of facilities. The purpose of the group is to provide a common and regular forum for Delphi developers to get together and discuss Delphi related issues. $10 admission to cover rental of room. All meeting notices are sent via fax or email. To add your name to our distribution list send company name, address info phone fax and e-mail to Michael Li at 76307.720@compuserve.com or fax (604) 432 1799 or tel (604) 432-1788.

VANCOUVER ENTERPRISE FORUM 432-8761

VANCOUVER FOXPRO USER GROUP (VFUG) September-June 2nd Tuesday at 1900 hours, 700-1177 W Broadway Info Doug at 736-2922 BBS 231-9709 and e-mail to joytan@unixserve.com

VANCOUVER GEOWORKS USERS CLUB For further info phone cell: 683-7490 (eves)

VANCOUVER GEOGRAPHIC INFORMATION SYSTEMS USER GROUP Meetings are held on the 1st Wednesday of each month September through May at B.C.I.T Town Square Room 'C' at 7:30pm. Contact Dwight at 940-1519 for information.

VANCOUVER KAYPRO USERS GROUP-VANCOUVER PORTABLE COMPUTER CLUB (VPCC) AMO 17 friendly members meet heritage CP/M software the latest DOS and Windows files plus inexpensive access to the planetwide Fidonet! Visitors welcome to our BBS Contact person. Jay Siegel 4291 Lancelot Dr, Richmond, B.C., V7C 4S4, 271 1519 BBS 271-5934

VANCOUVER NETWARE USERS GROUP (VNUG) is an official user group recognized by the Netware Users International Assoc and supported in part, by Novell. Meetings are held on the first Business Monday of every month at The Stanley Park Dining Pavilion. All aspects of the networking environment are discussed and presented with emphasis on the Netware network operating system. The workshop begins at 4:00p.m. buffet dinner at 6:00pm, at 7:00pm at a Q&A session followed by a presentation ending at around 8:30pm Member non-member and student pricing applies to the workshop and/or dinner-presentation. For further information or meeting topic announcements call our voice mail at 689-VNUG (689-8684)

VANCOUVER OS/2 USER GROUP Attended by OS/2 gurus and novices alike and well supported by IBM. The large and lively meeting is held on the first Wednesday of each month at the BC Tel Building 3777 Kingsway Burnaby and starts at 6:45 pm Join us for an informal workshop beginning at 11:30 am on the first and third Saturdays of each month at Doppler Computer Superstores 405 W 8th Ave. Vancouver Contact Jim Shewchuk 876-4790

VANCOUVER PC USERS SOCIETY (VPCUS)- Meets every Thursday 7pm at Science World members free $5 guests. Excellent Q&A membe & feature presentation Our mission is to educate and inform our members and the general public on the current and future issues in personal computing, and to provide a social context for the business educational and personal use of microcomputers. We offer on disk newsletter educational seminars special interest groups (see separate VPCUS SIG listings),and more Call 290-0660 for details and schedule.

VANCOUVER SMALLTALK USERS GROUP (VSMUG) is a group of individuals and organizations interested in object-oriented analysis design and programming with a particular emphasis on Smalltalk. Primarily for technical developers to meet share ideas and experiences. Focus technical issues and learn cool stuff. It's designed not to be a forum for sales pitches from vendors. RSVP VSMUG@vcn.BC.CA or visit our web site at http://lucy.cec.uvic.ca/~bhft

VANCOUVER WINDOWS NT USERS GROUP (VANTUG) Meetings are held on the 3rd Tuesday July Sept Nov at 6:30pm Please consult our website for further information on agenda items membership Details or meeting locations: http://www.vantug.com Email Nancy Pearce VANTUG President at Nancy@elsewco.bc.ca.

VISUAL BASICS USERS GROUP is for users developers and consultants creating consumer programs and client specific applications Presentations by industry experts. Meets 2nd Thursday of each month at 6:00pm at Vancouver Film School 420 Homer St(&Hastings,above Web Cafe) Vancouver,BC Contact 24-6600 or salespro@bc.sympatico.ca for details of upcoming meeting.

VISUAL OBJECT DEVELOPERS ASSOCIATION OF VANCOUVER For information on our next meeting contact John Kleinmeister (604) 430-8210 fax (604) 431-3846 CIS 72120,3150

VPCUS CLARION-TOPSPEED SIG-Clarion is a full-featured,industrial-strength DOS &Windows application development tool. Its superior high level language and re-usable templates produce compilable code and tight EXE's then run fast and are royalty free This lively SIG attracts a range of participants from seasoned professional programmers to new users and the curious Meets the 2nd Tuesday of every month Contact John Gollu, 736-7782.

VPCUS DBUG SIG (Data Base Users Group) Emphasis is on solving problems of data management with special reference to Paradox. Bring a blank 3.5 inch disk to pick up goodies from the meeting Meetings for the next few months will be informal, and held at a local pub. Contact Hugh Froese 519-3883

VPCUS Educational Seminars — Members $5 Non-members $15 Various topics times and dates. Contact Gwenda Elwood, 737 8674

VPCUS HTML AUTHORING SIG- This SIG is a good place to come for informal discussions with fellow HTML developers or to get advice on building business and personal Web pages Topics include graphics and HTML, plug-ins, the browser wars,jambo, connectivity issues and marketing on the Internet. Both novice and advanced HTML authors are welcome. We meet on the 2nd Tuesday of each month Contact Brenda Delaney bdelaney@unixg.ubc.ca or Virginia Green virginia@arts.ubc.ca for meeting info,and to get our mail list

VPCUS Internet SIG New to the info highway? Get to know the Internet and the Web with an experienced guide Contact Joe Thompson for details 985-0045.

VPCUS LINUX SIG-Linux is the free alternative to Windows DOS,and OS/2. It's the tried and true Unix OS configured to run on PC's. The system is open, full featured-robust, and getting better all the time "Most web servers run on Linux. See what makes it so attractive to those who know. Meets on the 3rd Monday of each month. Contact Stan Clausen at 532-6846 or email clausen@direct.ca

VPCUS NETWORKING SIG- This is the place if you are a network administrator and you want a break from beating your head against a wall or want to relate with people who actually care what you're talking about. Come and share Novell gritty stories tips tricks and support ideas. Currently on hiatus we're looking for volunteers interested in getting this SIG going again. Contact Brenda Delaney bdelaney@unixg.ubc.ca, or fax 224 2143 for more information.

VPCUS WINDOWS PROGRAMMING SIG- For programmers and Intermediate to expert Windows users who are interested in PC programming particularly in C Access Delphi,VB java,etc. Meets on the 2nd Tuesday of most months Contact Casey Hawthorne at 879-2703,or email caseyh@istar.ca

VPCUS WINDOWS USERS SIG-For Windows users of all levels. Learn and share tips techniques,pitfalls, configurement and optimizing strategies for best using WIN 95. A new SIG to meet on the 3rd Wednesday of the month Contact Casey Hawthorne at 879-2703 or email caseyh@istar.ca

VPCUS WORDPERFECT SIG. Participants share tips and tricks of this wonderful office product. Contact Holly Rivers at 731-0038 or email hollyr@idowco.com

Help Desk Institute Local Chapter An organization providing training education and a networking forum for Help Desk Professionals Those people who help computer users with hardware or software problems For more information on membership Please mail your e-mail to Karen Yuen at: KYUEN@VSE.CA

CLASSIFIEDS

ADVERTISING IS FREE FOR INDIVIDUALS For business classifieds are $7 per line (40 characters) Send in your ad along with your payment for the October issue by Friday, August 29, 1997. Individuals: to qualify for a free ad the ad must be for a one-of-a-kind item Free ads qualify for one insertion in the local edition only All other ads classify as business ads and are subject to the $7 per line charge *The Computer Paper* reserves the right not to print submissions

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SEPTEMBER

HRMS/EXPO'97 is the world's leading business conference and exposition on information technology for Human Resources, Benefits and Payroll. September 16-18 1997 Conference & Exposition at Javits Convention Center New York City. World class keynotes include technology visionary Esther Dyson, PeopleSoft founder and CEO Dave Duffield, HRMS strategic guru Naomi Lee Bloom. For further information contact: Miller Freeman, 1975 W.El Camino Real, Suite 307, Mountain View CA 94040. Fax 415-966-8934.

Technology Trade Show/Conference: intranet + extranet Conference & Exposition sponsored by Gartner Group at Moscone Convention Center, San Francisco CA. Tuesday September 23-Thursday September 25. CEOs and key executives from leading internetworking hardware and software companies will provide keynote presentations. For more information phone: 203 256-4700 fax: 203-256-4730, www.expocon.com/intraextra.

BC TIA is the host sponsor of SOFTWORLD. SOFTWORLD is a business to business deal making forum for software developers, distributors, VARs, systems integrators and investors. SOFTWORLD is not a consumer trade show. Senior software and information technology executives from Canada, the USA, Asia and Europe attend SOFTWORLD because it provides international opportunities to explore new business relationships and to make deals. More than 700 delegates from 30 countries will come to SOFTWORLD'97 in Vancouver September 7-10 1997 to make deals. For more information call 604 683 3818 or email info@softworld.org web: www.softworld.org

IT Forum 97, an exciting mega show integrating three of Wertheim's most successful Expo. At Jacob K. Javits Convention Center New York City. September 15-19 1997 Conference. September 16-18, 1997 Exposition. Free exhibit admission with early registration. For further information please contact: Miller Freeman, 1975 W.El Camino Real, Suite 307 Mountain View CA 94040. Phone 1-800-232 3976. Fax: 415 966-8934. http://www.itforum.com Exhibit sales: Dave Dodd, Karl Freiler, Jennifer Isola, or Ken Tabury.

DB/EXPO New York, UNIX and Windows NT EXPO and Internet Expo join for first IT FORUM in September. IT FORUM will debut in September. The conference and exposition will be held Sept. 15-19, 1997 at Jacob K. Javits Convention Center New York. Register to attend IT FORUM 97 by phone, fax or via the Internet. Phone: 415-819-4221 fax: 415 966-8934 Internet: kcade@mfi.com

APEC SME Business Forum in Ottawa, September 17-19, 1997. Over 200 delegates from outside Canada will include CEO's, VP's of Marketing, Business Development and Industry Association representatives. For more information contact the APEC SME Forum at (604) 775 7265 or visit the website at http://bc.cin.nac.ca/apec

OCTOBER

"INTERACTIVE MEDIA WEEK-SFOOTWORLD". To be held in San Francisco Thursday October 2-Sunday October 5, 1997. Children's Interactive Expo Thursday October 2-Sunday October 5 at Fort Mason Center, San Francisco.

Complimentary technology training for teachers: October 2-October 3 from 1-5pm. Complimentary School Field Trips and Workshops-Thursday October 2-Friday October 3 from 9:00am-1:00pm. Computer and Multimedia Arts Festival (CoMA): Thursday October 2-Saturday October 4 at Open House Galleries. SOMA San Francisco Educational Tours: Friday October 3. Mayor's Interactive Media Summit: Saturday October 4. For more information call the San Francisco Partnership at 415-352-8801 or email at podom@sfp.org. For the latest information on Interactive Media Week, please see www.sfp.org

NOVEMBER

Northern Technology Show November 15 & 16 at the Prince George Civic Centre. For more information check out the web site www.tech97.bc.ca

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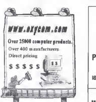

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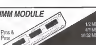

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Index of Advertisers

Accounting
Dynacom 10
MTW Solutions Online 74
Books
Anne Warehouse 127
Chapters 131
Cody Books 125
Firefly Books Ltd 130
Hall Press Computer Books 130
IDG Books 127
Independent Book Sellers 129
Micro Computer Hardware Directo 140
Microsoft Press 109
Prentice-Hall Canada 129
Business Opportunity
Access International 141
Camera Equipment
Beau Photo Supplies Inc. 104
Broadway Camera 108
CD ROM
Multimedia Technologies .81
Discovery Multimedia .98
SanPar Marketing 142
The One-Off CD Shop 142,144
Zenn Systems 143
Communications
AdTel 144
Aeon Inc. 140
Computer Memory
Memory House Inc 143
Power Group & Associates 118
SIMMCO. 140
Stevmac Industries Ltd 142
Systematic Electronic 142
Events
Computer Fair and Swap Meet 144
Hardware & Software
3J Computers .70
Aeon Computer .58
ACP Marketing 104
Addtex Computer .86
AdvanPlus Computer 66
AE Electronics .22
AMK Services 130
Addtec Computer Technology 94
Ano Office Automation .92
Anovision on Campus .85
Arbutus Computers 98
Ascension Computer Services 142
ATIC Computer .50
B&C Computers 143
Beckman Computer 108
Benchmark Computers .94
Beta Computers 107
Bertec Computers .92
Bondwell .3
Brampton Computers 112
C.C. Tech .38
Campus Computers 148
Channel Technology 108
CLT/Commercial Laser 138
CMS Technology Ltd 41
Comet Computer Centre .92
Compu 2000 .99
Compumon .92
Connectix .26
Creative Computer Systems .96
CSC Computer Service Centre Ltd .31
Cybermedia .46
Daiwa 145
Dell Canada .2,4
Disney Interactive 71
Enssen Computers 69
Encore Software 79
Epson 13
Eurosoft .52
Faronlet Canada 84
Frontier Computer .25
U.S. Computer 114
GG Micro/Diamond .76
Gisco Computer 108
Hyuan Canadian Enterprise LTD 141
Hyundai 14
InfoWave Computer Inc .68
International PC Market .85
Intertech Computers .83
IPC 140
Island Key Computers 110
Jazeem Computers 88
JRG Computers Inc. 108
L.C.F Advanced Technologies 97
Lexton Computer software Ltd. 100
Lexmark .76
Logitech 56
Lenzen Group .81
Maple Oak Computer Solutions 142
Matrox Graphics 7
MCM Integrated Technology 130
Micro Business Systems 80
Micro Canada Computers 47
Micro Video 141
Micro West Computers 111
MicroConcept 18-20
MicroGram Systems Canada Ltd 102
Microserve Business Systems 111
Motorola .3
Multilink Computers 66
NetLink Computer .54
Network Control 143
New Tech 48
Data Type Computer .88
Nu Age Computer Plus 43
Oxysom .141
Pattern Microsystems Ltd 108
Phase 1 Systems .27
Portable World 140
PowerComp Technologies 77
Panasonic Computers .92
Primax Computers .98
Printer Solutions .34
Printers Plus 109
Progress Marketing 141
Quantum .98
Quantum Technologies .87
Quarterdeck 8
RDA Inc. 109
Rock Computers .44
Services .30
Sayson Technologies Ltd. .90
Solonet 108
Storm .78
Strong Computers 102
SuperData Technologies Ltd .57
The Canadian Computer Store .84
TNP Electronic Canada Ltd. .40
Tricara Computer Centre 100
Ultinet .23
Umax .62
United Computers Ltd. .86
USRobotics .21
Vancouver TechnoStore 110
Viewsonic 11,26
VM Computer World 112
Wall Computer Systems 106
Worldwide Computers ltd 49
YHC Cassette Industrial Ltd. 141
Ink Refills
Canadian Labels 108 141
Cyto-Tech Laboratories 148
[illegible]
Calnuzer Electronic Publishing 136
Compu 2000 135
Computer Buyer's Warehouse Dire 134
Discount Software Club 132
Mac Station 136
Phil Kushnir Enterprises 140
Strider Computer Group 138
Multimedia
AEI Enterprises 145
Annex .26
Virgin Megastore 87
Networks
Pacific Edge Network Services 149
Notebooks
MobilTech Int. (MTI) 97
Notebook City 100
Office Space
Goddard & Smith Int'l 141
Online
BC Tel Advanced Communications .8
Blue Crow Internet Company 120
Buy & Sell Press 116
Cybersurf 124
Cybernus Online 113,123
InZnet Networking Inc. 116
Infomatch Internet 122
Internet Direct 117
Internet Gateway 115,118
Internet Portal Services 127
J. V. B. Technology 119
Netcom Canada 15,26
OCT Online .98
Planeteer Internet .38
Rockart Communication 118
SmartNet 125
SOHO Skyway 142
The Electric Mail Company 124
Security
Office Guard Security Systems 139
Service & Computers
AVC Electronics 140
CBL Data Recovery Technologies 140
CCL CARE Computers Ltd 142
ComputerWorks 141
Data Recovery Labs 143
ECL Computing 140
Hipec Consulting 141
IT Systems Inc. 142
Laura Johnston 138
MJI Enterprises 143
Macdonald Harris & Assoc. 140
Norm Computer-Serve 143
REA Systems 140
The Works Computer Training and 143
Triton Computer Systems 140
Usera Corporation 143
UNI Management Information Syst 140
Service Bureau
electroZine 48
Toner Remanufacturer
Amoretto Laser Products 107
Ribbon Xchange 113
Save On Laser Services Inc 48
Training
ExecuTrain of Vancouver 138
Justice Institute of BC 138
Lantec 138
Northern Digital Ltd. 137
Quartech Systems 141
SAIT 140
Video
VFX Video 114

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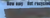

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Full circle in space

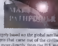
When I was a little kid, in the late 1950s and early '60s, I used to wake up early in the morning and sneak downstairs to watch the U.S. space shots live on TV.

JEFF EVANS

Since I was on the West Coast, I often had to get up before 5 or 6 in the morning, and as often as not, the launch wouldn't even happen. There'd be a technical problem, or bad weather and they'd scrub the launch, or the rocket would take off later while I was at school.

But I'd never miss a launch if I could help it. I watched, mesmerized, once as a probe with a TV camera mounted in its nose dived into a crater-specked landscape, giving its last few video frames in its sacrificial fall so that I could *feel* as if I was flying to that other world.

Even if space travel isn't always a "practical" activity (we could get into long debates on this subject), there was something compelling about mankind's consciousness leaving this planet, even if only to look back on it from a distance. The feeling I had watching a rocket climb up and disappear into outer space was one of wonder, that the world wasn't limited to what was on my street, that it was possible to go places and learn things if you wanted to badly enough and willing to work hard enough.



Now, let's jump forward 35 years, and it's a different world. Space travel isn't exactly routine, but its fruits are a largely unnoticed part of daily life: our weather reports are based on satellite imagery, and our TV and other communications are largely based on the global satellite network. The high-tech gadgets that came out of the civilian space program (and, perhaps more directly, from the U.S. military aerospace and spying activities) have proliferated and helped to give rise to the personal computer and the Internet.

It's a different world in other ways, too. The techno-optimism of the last generation has given way to a more skeptical attitude. For everyone who saw the Challenger space shuttle blow up, there's a tinge of sadness in manned space travel—even astronauts are mortal, and computers, no matter how wonderful, haven't cured any of the givens of human existence. We're still as frail and foolish as ever.

But now about 20 years after the last Viking landings we're back on Mars. And, in my opinion, the Internet and the personal computer have made it a very different event. I haven't seen any Mars coverage on TV. Instead, I've been watching it on the World Wide Web.

And, in a way I'm experiencing what I haven't felt since those pre-dawn launches I watched as a child—a real connection to what's happening on another world.

Far from being just a soulless tool, a computer can occasionally be a very intimate machine. The hardware runs the software, which interacts with the wetware (i.e., a squishy human brain). When I'm sitting half hypnotized by my connection with the computer screen, in some sense my consciousness is linked with the computer. When the computer is linked to Mars, so am I.

At times during the weeks after the landing on July 4, millions of people around the world were sharing that experience, overloading the NASA Web site, and prompting other computing centres around the globe to volunteer bandwidth to accommodate the public's interest. There are two people running the NASA Mars Web site, and they are managing to make it all seem about as much like a neighborhood event as any news story could be.

However, this is one of those occasions where I seriously fret over the issue of the info-haves and have nots. I don't think anyone who hasn't the option of spending time on Mars vicariously via the Web is going to be economically or politically disadvantaged by this, but I wonder if they aren't going to be missing out on something that is still precious—the right to attach to a tendril of mankind's thought that is stretching across the void to explore another world. That Mars seems increasingly likely to have once shared many of the features of our own living world, and then lost them, makes it especially poignant.

I should make my bias in this matter plain, if it isn't already. I think that using space technology and computer technology to better understand our world is one of the best things we can do with these inventions. I think that our understanding of this world is much improved by having other worlds to compare our own to. I think that our appreciation of life is improved by understanding that life is something that can't be taken for granted.

Although some American taxpayers may be annoyed at this concept, I tend to regard the U.S. space program as world property. I know that, proportional to our size, Canada has a proud record in space exploration, but nobody in the world puts on a show like the Yanks do.

Even the Americans have been giving second thoughts to the extravagant costs of space in recent years, but for good reasons and bad, there has always been enough support, public and institutional, to keep things going.

After losing their $1 billion Mars orbiter a few years ago, NASA had to learn how to make more but cheaper probes using, as they said, "off the shelf parts." No-name clone space probes, instead of brand name ones.

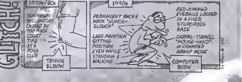
A good many of the off-the-shelf parts in the current lander come off a personal-computer-technology shelf. The mobile data modem in the Sojourner rover comes from a Montreal high-tech firm. The low-powered brain of the rover (low in both [illegible] and processing speed) is a version [illegible] NASA is benignly benefiting from the [illegible] computing and telecom technology that has allowed malignant corporations to downsize their workforces.

At a time when NASA appeared to be losing the interest of the public after a long series of mission failures, the ability of millions of people to experience space exploration personally and at will has given at least a temporary boost to the argument for some reasonable level of continuing interplanetary research.

The personal computer industry owes a lot to the space program that gave rise to much of our fundamental technology. With the linking of millions of computer users to Sagan Station on Mars, we are casting our votes for space with every click of a mouse button, and paying back part of that debt.

If all goes well, and the Mars orbital surveyor starts sending back the first pictures in its high resolution photo map of Mars around Sept. 12, I'll be watching on my computer.

Will the "face" on Mars turn out to be just a pile of natural rocks? Will the Martians have managed to sweep away all of their footprints and pick up all of their pop cans before the orbiter catches them in its narrow angle lens? I can hardly wait to find out. ◻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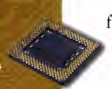


As a leading solution provider for the last 10 years in the advanced technology industry, the company has developed customized hardware, software and network systems for its 5,000 clients ranging from dual link terminals and telescope interfaces for the University of British Columbia to database systems for ICBC agents The company has continued to demonstrate the soundness of its business strategy with record earnings year after year

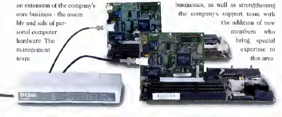
Dexton has now trained its sights on the special requirements of the new customer markets The company has made sweeping changes to its organizational structure with the implementation of four customer focussed divisions Retail Computing, Industrial Services, Software Development, and Extended Services & Training The company is also looking to grow by strategic investments and acquisitions

Retail Computing Division

The Retail Computing Division is an extension of the company's core business - the assembly and sale of personal computer hardware The management team consists of highly trained design specialists and engineers who market products and services to small and medium sized businesses which require professional expertise to assist their computer automation strategy

Industrial Division

The Industrial Division complements the existing Retail Computing division by focussing on data networking design, high speed network connections, remote computing and Internet products This division provides a new platform of technical and engineering support for Dexton's existing base of medium and large businesses, as well as strengthening the company's support team with the addition of new members who bring special expertise to this area



Software Development Division

The Software Development Division, in addition to developing customized applications for the company's extensive client base will complete Dexton's ongoing software development projects The company is developing a digital accounting and video conferencing software package known as the Business Minder The Business Minder is a powerful accounting package that functions together with a scanner and digital camera, allowing users to store invoices and inventory images into computer memory As a result, such images can be electronically retrieved and viewed on screen This process is intended to promote efficiency, better organize accounting and inventory documents, and provide for a paperless environment.

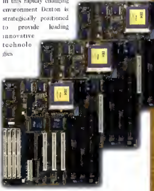
The Business Minder operates in both single and multi-user environments and incorporates third party enhancements to facilitate desktop video conferencing within a company's network, facilitating face-to-face video interaction on a regular computer monitor

Extended Services & Training

The Extended Services & Training Division further broadens Dexton's service and support umbrella. The "solution-oriented" division provides in-house services ranging from wiring installations to education and training The division also is in the process of designing a world class training facility that will offer computer training and job entry skills to individual and corporate clients

Over the course of 10 years, Dexton has shaped and directed its growth with the focus on client relationships It has worked closely with MacMillan Bloedel, BC Tel, Simon Fraser University, Ministry of the Attorney General and the Cities of Burnaby, Coquitlam and Vancouver. In addition to purchasing computer equipment, the group also participates in joint programs initiated by Dexton For example, the Canadian Institute for Technological Advancement (CITA) is supported by the University of British Columbia, Simon Fraser University, The Vancouver Board of Trade, World Trade Centre, TRIUMF, Ballard Power and some 60 other businesses and institutions

In this rapidly changing environment Dexton is strategically positioned to provide leading innovative technologies



Abdul Ladha *Chairman and CEO*, Haneef Esmail *Investor Relations*
Rhonda Leach *Administration*, Hafez Panju *Retail Computing*,
Rick Donaldson *Industrial Division*, Edison Ho *Controller*

DEXTON

Corporate Information
Listed: VSE Symbol: DXT Shares Outstanding: 6,950,000

For More Information
Contact Investor Relations: Haneef Esmail

Dexton Technologies Corporation
3112 Boundary Road, Burnaby, B.C. Canada V5M 4A2 Tel (604) 433-9866 Fax (604) 432-9866

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COMPUTER & ACCESSORIES CATALOGUE 1997

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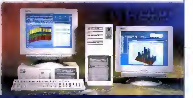

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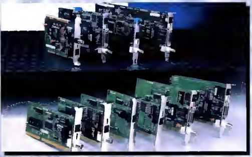

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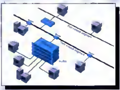

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Integrated Fast SCSI-2
Controller, CD ROM
Integrated 10/100 MBS
Network Adpator.

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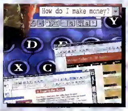
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[illegible] again, if you're not satisfied with your U.S. Robotics x2 Technology 56K modem, simply [illegible] purchase, along with dated receipt, to the store or mail order reseller where you bought it for a full refund.

This offer [illegible] all other preceding x2 offers for Sportster and Courier [illegible] modems.

[illegible] Sportster 56K Faxmodems (Models 1784, 1785, 1786, 1787 and 1789) [illegible] 1867 [illegible] Upgrades must be claimed [illegible] 1998.

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3. Enclose this completed form with a copy of your dated modem receipt, original UPC bar code symbol and serial number from the modem package (see samples below) and mail to
   U.S. Robotics, x2 Delivers More, c/o CSG Fulfillment, 35 The Links Rd., Suite 201,
   North York, Ontario M2P 1T8

Any questions regarding this program please call CSG Fulfilment at 1 800-814-9824 or 416-733 2655
This offer replaces all other preceding x2 offers for Sportster and Courier desktop modems

(Please print all information clearly)

Name

Address

City **Prov** **Postal Code**

Phone **E-mail Address**

Retailer / Mail Order Reseller where modem purchased

$65 CDN cash rebate offer valid with purchase of Sportster 56K Faxmodem models 1784 1785 1786 178[illegible] and [illegible] and Courier 56K Faxmodem models 1867 1868 and 18[illegible] only purchased between July [illegible] and October 4 1997. Request must include copy of dated modem sales receipt, actual UPC bar code and serial number from the modem package. VAR and OEM product not included. One $65 CDN rebate per modem purchase, limit five rebates per customer. Not responsible for lost, late or misdirected mail. Request must be postmarked by November 15 1997. Valid in Canada only. **Not valid with any other offer.** Please allow 6 to 8 weeks for receipt of cheque.

UPC SAMPLE

XXXXX XXXXX

SERIAL NUMBER SAMPLE

The following UPC codes are the only acceptable codes for this offer. No other UPC codes are valid. Tape UPC bar code over this box.

7-30168-00612-0
7-30168-00680-1
7-30168-00638-0
7-30168-00669-4
7-30168-00629-8
7-30168-00670-0
7-30168-00683-7
7-30168-00687-6

Tape serial number & bar code here.